

FES 12-24 • DOE/EIS-0403

Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States

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Chapter 11

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Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States (FES 12-24; DOE/EIS-0403)

Responsible Agencies: The U.S. Department of the Interior (DOI) Bureau of Land Management (BLM) and the U.S. Department of Energy (DOE) are co-lead agencies. Nineteen cooperating agencies participated in the preparation of this PEIS: U.S. Department of Defense; U.S. Bureau of Reclamation; U.S. Fish and Wildlife Service; U.S. National Park Service; U.S. Environmental Protection Agency, Region 9; U.S. Army Corps of Engineers, South Pacific Division; Arizona Game and Fish Department; California Energy Commission; California Public Utilities Commission; Nevada Department of Wildlife; N-4 Grazing Board, Nevada; Utah Public Lands Policy Coordination Office; Clark County, Nevada, including Clark County Department of Aviation; Doña Ana County, New Mexico; Esmeralda County, Nevada; Eureka County, Nevada; Lincoln County, Nevada; Nye County, Nevada; and Saguache County, Colorado.

Locations: Arizona, California, Colorado, Nevada, New Mexico, and Utah.

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Abstract: The BLM and DOE have jointly prepared this PEIS to evaluate actions that the agencies are considering taking to further facilitate utility-scale solar energy development in six southwestern states.¹ For the BLM, this includes the evaluation of a new Solar Energy Program applicable to solar development on BLM-administered lands. For DOE, it includes the evaluation of developing new guidance to further facilitate utility-scale solar energy development and maximize the mitigation of associated potential environmental impacts. This Solar PEIS evaluates the potential environmental, social, and economic effects of the agencies' proposed actions and alternatives in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality's regulations for implementing NEPA (Title 40, Parts 1500–1508 of the *Code of Federal Regulations* [40 CFR Parts 1500–1508]), and applicable BLM and DOE authorities.

For the BLM, the Final Solar PEIS analyzes a no action alternative, under which solar energy development would continue on BLM-administered lands in accordance with the terms and conditions of the BLM's existing solar energy policies, and two action alternatives that involve implementing a new BLM Solar Energy Program that would allow the permitting of future solar energy development projects on public lands to proceed in a more efficient, standardized, and environmentally responsible manner. The proposed program would establish right-of-way authorization policies and design features applicable to all utility-scale solar energy development on BLM-administered lands. It would identify categories of lands to be excluded from utility-scale solar energy development and specific locations well suited for utility-scale production of solar energy where the BLM would prioritize development (i.e., solar energy zones or SEZs). The proposed action would also allow for responsible utility-scale solar development on lands outside of priority areas.

¹ Utility-scale facilities are defined as projects that generate electricity that is delivered into the electricity transmission grid, generally with capacities greater than 20 megawatts (MW).

For DOE, the Final PEIS analyzes a no action alternative, under which DOE would continue to address environmental concerns for DOE-supported solar projects on a case-by-case basis, and an action alternative, under which DOE would adopt programmatic environmental guidance for use in DOE-supported solar projects.

The BLM and DOE initiated the Solar PEIS process in May 2008. On December 17, 2010, the BLM and DOE published the Draft Solar PEIS. Subsequently, on October 28, 2011, the lead agencies published the Supplement to the Draft Solar PEIS, in which adjustments were made to elements of BLM's proposed Solar Energy Program to better meet BLM's solar energy objectives, and in which DOE's proposed programmatic environmental guidance was presented.

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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

10	AADT	annual average daily traffic
11	AASHTO	American Association of State Highway and Transportation Officials
12	AC	alternating current
13	ACC	air-cooled condenser
14	ACEC	Area of Critical Environmental Concern
15	ADEQ	Arizona Department of Environmental Quality
16	ACHP	Advisory Council on Historic Preservation
17	ADOT	Arizona Department of Transportation
18	ADWR	Arizona Department of Water Resources
19	AERMOD	AMS/EPA Regulatory Model
20	AFC	Application for Certification
21	AGL	above ground level
22	AIM	Assessment, Inventory and Monitoring
23	AIRFA	American Indian Religious Freedom Act
24	AMA	active management area
25	AML	animal management level
26	ANHP	Arizona National Heritage Program
27	APE	area of potential effect
28	APLIC	Avian Power Line Interaction Committee
29	APP	Avian Protection Plan
30	APS	Arizona Public Service
31	AQCR	Air Quality Control Region
32	AQRV	air quality-related value
33	ARB	Air Resources Board
34	ARRA	American Recovery and Reinvestment Act of 2009
35	ARRTIS	Arizona Renewable Resource and Transmission Identification Subcommittee
36	ARS	Agricultural Research Service
37	ARZC	Arizona and California
38	ATSDR	Agency for Toxic Substances and Disease Registry
39	AUM	animal unit month
40	AVSE	Arlington Valley Solar Energy
41	AVWS	Audio Visual Warning System
42	AWBA	Arizona Water Banking Authority
43	AWEA	American Wind Energy Association
44	AWRM	Active Water Resource Management
45	AZDA	Arizona Department of Agriculture
46	AZGFD	Arizona Game and Fish Department

1	AZGS	Arizona Geological Survey
2		
3	BA	biological assessment
4	BAP	base annual production
5	BEA	Bureau of Economic Analysis
6	BISON-M	Biota Information System of New Mexico
7	BLM	Bureau of Land Management
8	BLM-CA	Bureau of Land Management, California
9	BMP	best management practice
10	BNSF	Burlington Northern Santa Fe
11	BO	biological opinion
12	BOR	U.S. Bureau of Reclamation
13	BPA	Bonneville Power Administration
14	BRAC	Blue Ribbon Advisory Council on Climate Change
15	BSE	Beacon Solar Energy
16	BSEP	Beacon Solar Energy Project
17	BTS	Bureau of Transportation Statistics
18		
19	CAA	Clean Air Act
20	CAAQS	California Air Quality Standards
21	CAISO	California Independent System Operator
22	Caltrans	California Department of Transportation
23	C-AMA	California-Arizona Maneuver Area
24	CAP	Central Arizona Project
25	CARB	California Air Resources Board
26	CAReGAP	California Regional Gap Analysis Project
27	CASQA	California Stormwater Quality Association
28	CASTNET	Clean Air Status and Trends NETwork
29	CAWA	Colorado Agricultural Water Alliance
30	CCC	Civilian Conservation Corps
31	CDC	Centers for Disease Control and Prevention
32	CDCA	California Desert Conservation Area
33	CDFG	California Department of Fish and Game
34	CDNCA	California Desert National Conservation Area
35	CDOT	Colorado Department of Transportation
36	CDOW	Colorado Division of Wildlife (now Colorado Parks and Wildlife)
37	CDPHE	Colorado Department of Public Health and Environment
38	CDWR	California Department of Water Resources
39	CEC	California Energy Commission
40	CEQ	Council on Environmental Quality
41	CES	constant elasticity of substitution
42	CESA	California Endangered Species Act
43	CESF	Carrizo Energy Solar Farm
44	CFR	<i>Code of Federal Regulations</i>
45	CGE	computable general equilibrium
46	CHAT	crucial habitat assessment tool

1	CIRA	Cooperative Institute for Research in the Atmosphere
2	CLFR	compact linear Fresnel reflector
3	CNDDDB	California Natural Diversity Database
4	CNEL	community noise equivalent level
5	CNHP	Colorado National Heritage Program
6	Colorado DWR	Colorado Division of Water Resources
7	CO ₂ e	carbon dioxide equivalent
8	CPC	Center for Plant Conservation
9	CPUC	California Public Utilities Commission
10	CPV	concentrating photovoltaic
11	CRBSCF	Colorado River Basin Salinity Control Forum
12	CREZ	competitive renewable energy zone
13	CRPC	Cultural Resources Preservation Council
14	CRSCP	Colorado River Salinity Control Program
15	CSA	Candidate Study Area
16	CSC	Coastal Services Center
17	CSFG	carbon-sequestration fossil generation
18	CSP	concentrating solar power
19	CSQA	California Stormwater Quality Association
20	CSRI	Cultural Systems Research, Incorporated
21	CTG	combustion turbine generator
22	CTPG	California Transmission Planning Group
23	CTSR	Cumbres & Toltec Scenic Railroad
24	CUP	Conditional Use Permit
25	CVP	Central Valley Project
26	CWA	Clean Water Act
27	CWCB	Colorado Water Conservation Board
28	CWHR	California Wildlife Habitat Relationship System
29		
30	DC	direct current
31	DEM	digital elevation model
32	DHS	U.S. Department of Homeland Security
33	DIMA	Database for Inventory, Monitoring and Assessment
34	DLT	dedicated-line transmission
35	DNA	Determination of NEPA Adequacy
36	DNI	direct normal insulation
37	DNL	day-night average sound level
38	DoD	U.S. Department of Defense
39	DOE	U.S. Department of Energy
40	DOI	U.S. Department of the Interior
41	DOL	U.S. Department of Labor
42	DOT	U.S. Department of Transportation
43	DRECP	California Desert Renewable Energy Conservation Plan
44	DSM	demand-side management
45	DSRP	Decommissioning and Site Reclamation Plan
46	DTC/C-AMA	Desert Training Center/California–Arizona Maneuver Area

1	DWMA	Desert Wildlife Management Area
2	DWR	Division of Water Resources
3		
4	EA	environmental assessment
5	EBID	Elephant Butte Irrigation District
6	ECAR	East Central Area Reliability Coordination Agreement
7	ECOS	Environmental Conservation Online System (USFWS)
8	EERE	Energy Efficiency and Renewable Energy (DOE)
9	Eg	band gap energy
10	EIA	Energy Information Administration (DOE)
11	EIS	environmental impact statement
12	EISA	Energy Independence and Security Act of 2007
13	EMF	electromagnetic field
14	E.O.	Executive Order
15	EPA	U.S. Environmental Protection Agency
16	EPRI	Electric Power Research Institute
17	EQIP	Environmental Quality Incentives Program
18	ERCOT	Electric Reliability Council of Texas
19	ERO	Electric Reliability Organization
20	ERS	Economic Research Service
21	ESA	Endangered Species Act of 1973
22	ESRI	Environmental Systems Research Institute
23		
24	FAA	Federal Aviation Administration
25	FBI	Federal Bureau of Investigation
26	FEMA	Federal Emergency Management Agency
27	FERC	Federal Energy Regulatory Commission
28	FHWA	Federal Highway Administration
29	FIRM	Flood Insurance Rate Map
30	FLPMA	Federal Land Policy and Management Act of 1976
31	FONSI	Finding of No Significant Impact
32	FR	<i>Federal Register</i>
33	FRCC	Florida Reliability Coordinating Council
34	FSA	Final Staff Assessment
35	FTE	full-time equivalent
36	FY	fiscal year
37		
38	G&TM	generation and transmission modeling
39	GCRP	U.S. Global Climate Research Program
40	GDA	generation development area
41	GHG	greenhouse gas
42	GIS	geographic information system
43	GMU	game management unit
44	GPS	global positioning system
45	GTM	Generation and Transmission Model
46		

1	GUAC	Groundwater Users Advisory Council
2	GWP	global warming potential
3		
4	HA	herd area
5	HAP	hazardous air pollutant
6	HAZCOM	hazard communication
7	HCE	heat collection element
8	HCP	Habitat Conservation Plan
9	HMA	herd management area
10	HMMH	Harris Miller Miller & Hanson, Inc.
11	HRSG	heat recovery steam generator
12	HSPD	Homeland Security Presidential Directive
13	HTF	heat transfer fluid
14	HUC	hydrologic unit code
15	HVAC	heating, ventilation, and air-conditioning
16		
17	I	Interstate
18	IARC	International Agency for Research on Cancer
19	IBA	important bird area
20	ICE	internal combustion engine
21	ICPDS	Imperial County Planning & Development Services
22	ICWMA	Imperial County Weed Management Area
23	IDT	interdisciplinary team
24	IEC	International Electrochemical Commission
25	IFR	instrument flight rule
26	IID	Imperial Irrigation District
27	IM	Instruction Memorandum
28	IMPS	Iron Mountain Pumping Station
29	IMS	interim mitigation strategy
30	INA	Irrigation Non-Expansion Area
31	IOP	Interagency Operating Procedure
32	IOU	investor-owned utility
33	IPCC	Intergovernmental Panel on Climate Change
34	ISA	Independent Science Advisor; Instant Study Area
35	ISB	Intermontane Seismic Belt
36	ISCC	integrated solar combined cycle
37	ISDRA	Imperial Sand Dunes Recreation Area
38	ISEGS	Ivanpah Solar Energy Generating System
39	ISO	independent system operator; iterative self-organizing
40	ITFR	Interim Temporary Final Rulemaking
41	ITP	incidental take permit
42	IUCNNR	International Union for Conservation of Nature and Natural Resources
43	IUCNP	International Union for Conservation of Nature Pakistan
44		
45	KGA	known geothermal resources area
46	KML	keyhole markup language

1	KOP	key observation point
2	KSLA	known sodium leasing area
3		
4	LCC	Landscape Conservation Cooperative
5	LCCRDA	Lincoln County Conservation, Recreation, and Development Act of 2004
6	LCOE	levelized cost of energy
7	L _{dn}	day-night average sound level
8	LDWMA	Low Desert Weed Management Area
9	L _{eq}	equivalent sound pressure level
10	LiDAR	light detection and ranging
11	LLA	limited land available
12	LLRW	low-level radioactive waste (waste classification)
13	LPN	listing priority number
14	LRG	Lower Rio Grande
15	LSA	lake and streambed alteration
16	LSE	load-serving entity
17	LTMP	long-term monitoring and adaptive management plan
18	LTVA	long-term visitor area
19		
20	MAAC	Mid-Atlantic Area Council
21	MAIN	Mid-Atlantic Interconnected Network
22	MAPP	methyl acetylene propadiene stabilizer; Mid-Continent Area Power Pool
23	MCAS	Marine Corps Air Station
24	MCL	maximum contaminant level
25	MEB	Marine Expeditionary Brigade
26	MFP	Management Framework Plan
27	MIG	Minnesota IMPLAN Group
28	MLA	maximum land available
29	MOA	military operating area
30	MOU	Memorandum of Understanding
31	MPDS	maximum potential development scenario
32	MRA	Multiple Resource Area
33	MRI	Midwest Research Institute
34	MRO	Midwest Reliability Organization
35	MSDS	Material Safety Data Sheet
36	MSL	mean sea level
37	MTR	military training route
38	MVEDA	Mesilla Valley Economic Development Alliance
39	MWA	Mojave Water Agency
40	MWD	Metropolitan Water District
41	MWMA	Mojave Weed Management Area
42	NAAQS	National Ambient Air Quality Standard(s)
43	NADP	National Atmospheric Deposition Program
44	NAGPRA	Native American Graves Protection and Repatriation Act
45	NAHC	Native American Heritage Commission (California)
46	NAIC	North American Industrial Classification System

1	NASA	National Aeronautics and Space Administration
2	NCA	National Conservation Area
3	NCCAC	Nevada Climate Change Advisory Committee
4	NCDC	National Climatic Data Center
5	NCES	National Center for Education Statistics
6	NDAA	National Defense Authorization Act
7	NDCNR	Nevada Department of Conservation and Natural Resources
8	NDEP	Nevada Division of Environmental Protection
9	NDOT	Nevada Department of Transportation
10	NDOW	Nevada Department of Wildlife
11	NDWP	Nevada Division of Water Planning
12	NDWR	Nevada Division of Water Resources
13	NEAP	Natural Events Action Plan
14	NEC	National Electric Code
15	NED	National Elevation Database
16	NEP	Natural Events Policy
17	NEPA	National Environmental Policy Act of 1969
18	NERC	North American Electricity Reliability Corporation
19	NGO	non-governmental organization
20	NHA	National Heritage Area
21	NHD	National Hydrography Dataset
22	NHNM	National Heritage New Mexico
23	NHPA	National Historic Preservation Act of 1966
24	NID	National Inventory of Dams
25	NLCS	National Landscape Conservation System
26	NMAC	<i>New Mexico Administrative Code</i>
27	NMBGMR	New Mexico Bureau of Geology and Mineral Resources
28	NMDGF	New Mexico Department of Game and Fish
29	NM DOT	New Mexico Department of Transportation
30	NMED	New Mexico Environment Department
31	NMED-AQB	New Mexico Environment Department-Air Quality Board
32	NMFS	National Marine Fisheries Service
33	NMOSE	New Mexico Office of the State Engineer
34	NMSU	New Mexico State University
35	NNHP	Nevada Natural Heritage Program
36	NNL	National Natural Landmark
37	NNSA	National Nuclear Security Administration
38	NOA	Notice of Availability
39	NOAA	National Oceanic and Atmospheric Administration
40	NOI	Notice of Intent
41	NP	National Park
42	NPDES	National Pollutant Discharge Elimination System
43	NPL	National Priorities List
44	NPS	National Park Service
45	NPV	net present value
46	NRA	National Recreation Area

1	NRCS	Natural Resources Conservation Service
2	NREL	National Renewable Energy Laboratory
3	NRHP	<i>National Register of Historic Places</i>
4	NRS	<i>Nevada Revised Statutes</i>
5	NSC	National Safety Council
6	NSO	no surface occupancy
7	NSTC	National Science and Technology Council
8	NTHP	National Trust for Historic Preservation
9	NTS	Nevada Test Site
10	NTTR	Nevada Test and Training Range
11	NVCRS	Nevada Cultural Resources Inventory System
12	NV DOT	Nevada Department of Transportation
13	NWCC	National Wind Coordinating Committee
14	NWI	National Wetlands Inventory
15	NWIS	National Water Information System (USGS)
16	NWPP	Northwest Power Pool
17	NWR	National Wildlife Refuge
18	NWSRS	National Wild and Scenic River System
19		
20	O&M	operation and maintenance
21	ODFW	Oregon Department of Fish and Wildlife
22	OHV	off-highway vehicle
23	ONA	Outstanding Natural Area
24	ORC	organic Rankine cycle
25	OSE/ISC	Office of the State Engineer/Interstate Stream Commission
26	OSHA	Occupational Safety and Health Administration
27	OTA	Office of Technology Assessment
28		
29	PA	Programmatic Agreement
30	PAD	Preliminary Application Document
31	PAH	polycyclic aromatic hydrocarbon
32	PAT	peer analysis tool
33	PCB	polychlorinated biphenyl
34	PCM	purchase change material
35	PCS	power conditioning system
36	PCU	power converting unit
37	PEIS	programmatic environmental impact statement
38	PFYC	potential fossil yield classification
39	PGH	Preliminary General Habitat
40	PIER	Public Interest Energy Research
41	P.L.	Public Law
42	PLSS	Public Land Survey System
43	PM	particulate matter
44	PM _{2.5}	particulate matter with a diameter of 2.5 µm or less
45	PM ₁₀	particulate matter with a diameter of 10 µm or less
46	PPA	Power Purchase Agreement

1	P-P-D	population-to-power density
2	PPH	Preliminary Priority Habitat
3	POD	plan of development
4	POU	publicly owned utility
5	PPA	Power Purchase Agreement
6	PPE	personal protective equipment
7	PSD	Prevention of Significant Deterioration
8	PURPA	Public Utility Regulatory Policy Act
9	PV	photovoltaic
10	PVID	Palo Verde Irrigation District
11	PWR	public water reserve
12		
13	QRA	qualified resource area
14		
15	R&I	relevance and importance
16	RAC	Resource Advisory Council
17	RCE	Reclamation Cost Estimate
18	RCI	residential, commercial, and industrial (sector)
19	RCRA	Resource Conservation and Recovery Act of 1976
20	RD&D	research, development, and demonstration; research, development, and
21		deployment
22	RDBMS	Relational Database Management System
23	RDEP	Restoration Design Energy Project
24	REA	Rapid Ecoregional Assessment
25	REAT	Renewable Energy Action Team
26	REDA	Renewable Energy Development Area
27	REDI	Renewable Energy Development Infrastructure
28	REEA	Renewable Energy Evaluation Area
29	ReEDS	Regional Energy Deployment System
30	REPG	Renewable Energy Policy Group
31	RETA	Renewable Energy Transmission Authority
32	RETAAC	Renewable Energy Transmission Access Advisory Committee
33	RETI	Renewable Energy Transmission Initiative
34	REZ	renewable energy zone
35	RF	radio frequency
36	RFC	Reliability First Corporation
37	RFDS	reasonably foreseeable development scenario
38	RGP	Rio Grande Project
39	RGWCD	Rio Grande Water Conservation District
40	RMP	Resource Management Plan
41	RMPA	Rocky Mountain Power Area
42	RMZ	Resource Management Zone
43	ROD	Record of Decision
44	ROI	region of influence
45	ROS	recreation opportunity spectrum
46	ROW	right-of-way

1	RPG	renewable portfolio goal
2	RPS	Renewable Portfolio Standard
3	RRC	Regional Reliability Council
4	RSEP	Rice Solar Energy Project
5	RSI	Renewable Systems Interconnection
6	RTO	regional transmission organization
7	RTTF	Renewable Transmission Task Force
8	RV	recreational vehicle
9		
10	SAAQS	State Ambient Air Quality Standard(s)
11	SAMHSA	Substance Abuse and Mental Health Services Administration
12	SCADA	supervisory control and data acquisition
13	SCE	Southern California Edison
14	SCRMA	Special Cultural Resource Management Area
15	SDRREG	San Diego Regional Renewable Energy Group
16	SDWA	Safe Drinking Water Act of 1974
17	SEGIS	Solar Energy Grid Integration System
18	SEGS	Solar Energy Generating System
19	SEI	Sustainable Energy Ireland
20	SEIA	Solar Energy Industrial Association
21	SES	Stirling Energy Systems
22	SETP	Solar Energy Technologies Program (DOE)
23	SEZ	solar energy zone
24	SHPO	State Historic Preservation Office(r)
25	SIP	State Implementation Plan
26	SLRG	San Luis & Rio Grande
27	SMA	Special Management Area
28	SMART	specific, measurable, achievable, relevant, and time sensitive
29	SMP	suggested management practice
30	SNWA	Southern Nevada Water Authority
31	SPP	Southwest Power Pool
32	SRMA	Special Recreation Management Area
33	SSA	Socorro Seismic Anomaly
34	SSI	self-supplied industry
35	ST	solar thermal
36	STG	steam turbine generator
37	SUA	special use airspace
38	SWAT	Southwest Area Transmission
39	SWIP	Southwest Intertie Project
40	SWPPP	Stormwater Pollution Prevention Plan
41	SWReGAP	Southwest Regional Gap Analysis Project
42		
43	TAP	toxic air pollutant
44	TCC	Transmission Corridor Committee
45	TDS	total dissolved solids
46	TEPPC	Transmission Expansion Planning Policy Committee

1	TES	thermal energy storage
2	TRACE	Transmission Routing and Configuration Estimator
3	TSA	Transportation Security Administration
4	TSCA	Toxic Substances Control Act of 1976
5	TSDF	treatment, storage, and disposal facility
6	TSP	total suspended particulates
7		
8	UACD	Utah Association of Conservation Districts
9	UBWR	Utah Board of Water Resources
10	UDA	Utah Department of Agriculture
11	UDEQ	Utah Department of Environmental Quality
12	UDNR	Utah Department of Natural Resources
13	UDOT	Utah Department of Transportation
14	UDWQ	Utah Division of Water Quality
15	UDWR	Utah Division of Wildlife Resources
16	UGS	Utah Geological Survey
17	UNEP	United Nations Environmental Programme
18	UNPS	Utah Native Plant Society
19	UP	Union Pacific
20	UREZ	Utah Renewable Energy Zone
21	USACE	U.S. Army Corps of Engineers
22	USAF	U.S. Air Force
23	USC	<i>United States Code</i>
24	USDA	U.S. Department of Agriculture
25	USFS	U.S. Forest Service
26	USFWS	U.S. Fish and Wildlife Service
27	USGS	U.S. Geological Survey
28	Utah DWR	Utah Division of Water Rights
29	UTTR	Utah Test and Training Range
30	UWS	Underground Water Storage, Savings and Replenishment Act
31		
32	VACAR	Virginia–Carolinas Subregion
33	VCRS	Visual Contrast Rating System
34	VFR	visual flight rule
35	VOC	volatile organic compound
36	VRHCRP	Virgin River Habitat Conservation & Recovery Program
37	VRI	Visual Resource Inventory
38	VRM	Visual Resource Management
39		
40	WA	Wilderness Area
41	WECC	Western Electricity Coordinating Council
42	WECC CAN	Western Electricity Coordinating Council–Canada
43	WEG	wind erodibility group
44	Western	Western Area Power Administration
45	WGA	Western Governors’ Association
46	WGFD	Wyoming Game and Fish Department

1	WHA	wildlife habitat area
2	WHO	World Health Organization
3	WIA	Wyoming Infrastructure Authority
4	WRAP	Water Resources Allocation Program; Western Regional Air Partnership
5	WRCC	Western Regional Climate Center
6	WREZ	Western Renewable Energy Zones
7	WRI	Water Resources Research Institute
8	WSA	Wilderness Study Area
9	WSC	wildlife species of special concern
10	WSMR	White Sands Missile Range
11	WSR	Wild and Scenic River
12	WSRA	Wild and Scenic Rivers Act of 1968
13	WWII	World War II
14	WWP	Western Watersheds Project
15		
16	YPG	Yuma Proving Ground
17		
18	ZITA	zone identification and technical analysis
19	ZLD	zero liquid discharge
20		
21		

CHEMICALS

24	CH ₄	methane	NO ₂	nitrogen dioxide
25	CO	carbon monoxide	NO _x	nitrogen oxides
26	CO ₂	carbon dioxide		
27			O ₃	ozone
28	H ₂ S	hydrogen sulfide		
29	Hg	mercury	Pb	lead
30				
31	N ₂ O	nitrous oxide	SF ₆	sulfur hexafluoride
32	NH ₃	ammonia	SO ₂	sulfur dioxide
			SO _x	sulfur oxides

UNITS OF MEASURE

37	ac-ft	acre-foot (feet)	dB	A-weighted decibel(s)
38	bhp	brake horsepower		
39			°F	degree(s) Fahrenheit
40	°C	degree(s) Celsius	ft	foot (feet)
41	cf	cubic foot (feet)	ft ²	square foot (feet)
42	cfs	cubic foot (feet) per second	ft ³	cubic foot (feet)
43	cm	centimeter(s)		
44			g	gram(s)
45	dB	decibel(s)	gal	gallon(s)

1	GJ	gigajoule(s)	MWe	megawatt(s) electric
2	gpcd	gallon per capita per day	MWh	megawatt-hour(s)
3	gpd	gallon(s) per day		
4	gpm	gallon(s) per minute	ppm	part(s) per million
5	GW	gigawatt(s)	psi	pound(s) per square inch
6	GWh	gigawatt hour(s)	psia	pound(s) per square inch absolute
7	GWh/yr	gigawatt hour(s) per year		
8			rpm	rotation(s) per minute
9	h	hour(s)		
10	ha	hectare(s)	s	second(s)
11	Hz	hertz	scf	standard cubic foot (feet)
12				
13	in.	inch(es)	TWh	terawatt hour(s)
14				
15	J	joule(s)	VdB	vibration velocity decibel(s)
16				
17	K	degree(s) Kelvin	W	watt(s)
18	kcal	kilocalorie(s)		
19	kg	kilogram(s)	yd ²	square yard(s)
20	kHz	kilohertz	yd ³	cubic yard(s)
21	km	kilometer(s)	yr	year(s)
22	km ²	square kilometer(s)		
23	kPa	kilopascal(s)	µg	microgram(s)
24	kV	kilovolt(s)	µm	micrometer(s)
25	kVA	kilovolt-ampere(s)		
26	kW	kilowatt(s)		
27	kWh	kilowatt-hour(s)		
28	kWp	kilowatt peak		
29				
30	L	liter(s)		
31	lb	pound(s)		
32				
33	m	meter(s)		
34	m ²	square meter(s)		
35	m ³	cubic meter(s)		
36	mg	milligram(s)		
37	Mgal	million gallons		
38	mi	mile(s)		
39	mi ²	square mile(s)		
40	min	minute(s)		
41	mm	millimeter(s)		
42	MMt	million metric ton(s)		
43	MPa	megapascal(s)		
44	mph	mile(s) per hour		
45	MVA	megavolt-ampere(s)		
46	MW	megawatt(s)		

ENGLISH/METRIC AND METRIC/ENGLISH EQUIVALENTS

The following table lists the appropriate equivalents for English and metric units.

Multiply	By	To Obtain
<i>English/Metric Equivalents</i>		
acres	0.004047	square kilometers (km ²)
acre-feet (ac-ft)	1,234	cubic meters (m ³)
cubic feet (ft ³)	0.02832	cubic meters (m ³)
cubic yards (yd ³)	0.7646	cubic meters (m ³)
degrees Fahrenheit (°F) –32	0.5555	degrees Celsius (°C)
feet (ft)	0.3048	meters (m)
gallons (gal)	3.785	liters (L)
gallons (gal)	0.003785	cubic meters (m ³)
inches (in.)	2.540	centimeters (cm)
miles (mi)	1.609	kilometers (km)
miles per hour (mph)	1.609	kilometers per hour (kph)
pounds (lb)	0.4536	kilograms (kg)
short tons (tons)	907.2	kilograms (kg)
short tons (tons)	0.9072	metric tons (t)
square feet (ft ²)	0.09290	square meters (m ²)
square yards (yd ²)	0.8361	square meters (m ²)
square miles (mi ²)	2.590	square kilometers (km ²)
yards (yd)	0.9144	meters (m)
<i>Metric/English Equivalents</i>		
centimeters (cm)	0.3937	inches (in.)
cubic meters (m ³)	0.00081	acre-feet (ac-ft)
cubic meters (m ³)	35.31	cubic feet (ft ³)
cubic meters (m ³)	1.308	cubic yards (yd ³)
cubic meters (m ³)	264.2	gallons (gal)
degrees Celsius (°C) +17.78	1.8	degrees Fahrenheit (°F)
hectares (ha)	2.471	acres
kilograms (kg)	2.205	pounds (lb)
kilograms (kg)	0.001102	short tons (tons)
kilometers (km)	0.6214	miles (mi)
kilometers per hour (kph)	0.6214	miles per hour (mph)
liters (L)	0.2642	gallons (gal)
meters (m)	3.281	feet (ft)
meters (m)	1.094	yards (yd)
metric tons (t)	1.102	short tons (tons)
square kilometers (km ²)	247.1	acres
square kilometers (km ²)	0.3861	square miles (mi ²)
square meters (m ²)	10.76	square feet (ft ²)
square meters (m ²)	1.196	square yards (yd ²)

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1 **11 UPDATE TO AFFECTED ENVIRONMENT AND IMPACT ASSESSMENT FOR**
2 **PROPOSED SOLAR ENERGY ZONES IN NEVADA**
3
4

5 The U.S. Department of the Interior Bureau of Land Management (BLM) has carried
6 17 solar energy zones (SEZs) forward for analysis in this Final Solar Programmatic
7 Environmental Impact Statement (PEIS). These SEZs total approximately 285,000 acres
8 (1,153 km²) of land potentially available for development. This chapter includes analyses of
9 potential environmental impacts for the proposed SEZs in Nevada—Amargosa, Dry Lake, Dry
10 Lake Valley North, Gold Point, and Millers—as well as summaries of the previously proposed
11 Delamar Valley and East Mormon Mountain SEZs and why they were eliminated from further
12 consideration. The SEZ-specific analyses provide documentation from which the BLM will tier
13 future project authorizations, thereby limiting the required scope and effort of project-specific
14 National Environmental Policy Act of 1969 (NEPA) analyses.
15

16 The BLM is committed to collecting additional SEZ-specific resource data and
17 conducting additional analysis in order to more efficiently facilitate future development in
18 SEZs. The BLM developed action plans for each of the 17 SEZs carried forward as part of the
19 Supplement to the Draft Solar PEIS (BLM and DOE 2011). These action plans described
20 additional data that could be collected for individual SEZs and proposed data sources and
21 methods for the collection of those data. Work is underway to collect additional data as specified
22 under these action plans (e.g., additional data collection to support evaluation of cultural, visual,
23 and water resources has begun). As the data become available, they will be posted on the project
24 Web site (<http://solareis.anl.gov>) for use by applicants and the BLM and other agency staff.
25

26 To accommodate the flexibility described in the BLM’s program objectives and in light
27 of anticipated changes in technologies and environmental conditions over time, the BLM has
28 removed some of the prescriptive SEZ-specific design features presented in the Draft Solar PEIS
29 (BLM and DOE 2010) and the Supplement to the Draft (e.g., height restrictions on technologies
30 used to address visual resource impacts). Alternatively, the BLM will give full consideration to
31 any outstanding conflicts in SEZs as part of the competitive process being developed through
32 rulemaking (see Section 2.2.2.2.1).
33

34 In preparing selected parcels for competitive offer, the BLM will review all existing
35 analysis for an SEZ and consider any new or changed circumstances that may affect the
36 development of the SEZ. The BLM will also work with appropriate federal, state, and local
37 agencies, and affected tribes, as necessary, to discuss SEZ-related issues. This work would
38 ultimately inform how a parcel would be offered competitively (e.g., parcel size and
39 configuration, technology limitations, mitigation requirements, and parcel-specific competitive
40 process). Prior to issuing a notice of competitive offer, the BLM would complete appropriate
41 NEPA analysis to support the offer. This analysis would tier to the analysis for SEZs in the Solar
42 PEIS to the extent practicable.
43

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

1 accessible via the project Web site (<http://solareis.anl.gov>) for ease of use by applicants and the
2 BLM and other agency staff.
3

4 This chapter is an update to the information on Nevada SEZs presented in the Draft Solar
5 PEIS. As stated previously, the Delamar Valley and East Mormon SEZs were dropped from
6 further consideration through the Supplement to the Draft Solar PEIS. For the remaining five
7 Nevada SEZs—Amargosa, Dry Lake, Dry Lake Valley North, Gold Point, and Millers—the
8 information presented in this chapter supplements and updates, but does not replace, the
9 information provided in the corresponding Chapter 11 on proposed SEZs in Nevada in the Draft
10 Solar PEIS. Corrections to incorrect information in Sections 11.1, 11.3, 11.4, 11.6, and 11.7 of
11 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
12 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
13 Solar PEIS.
14

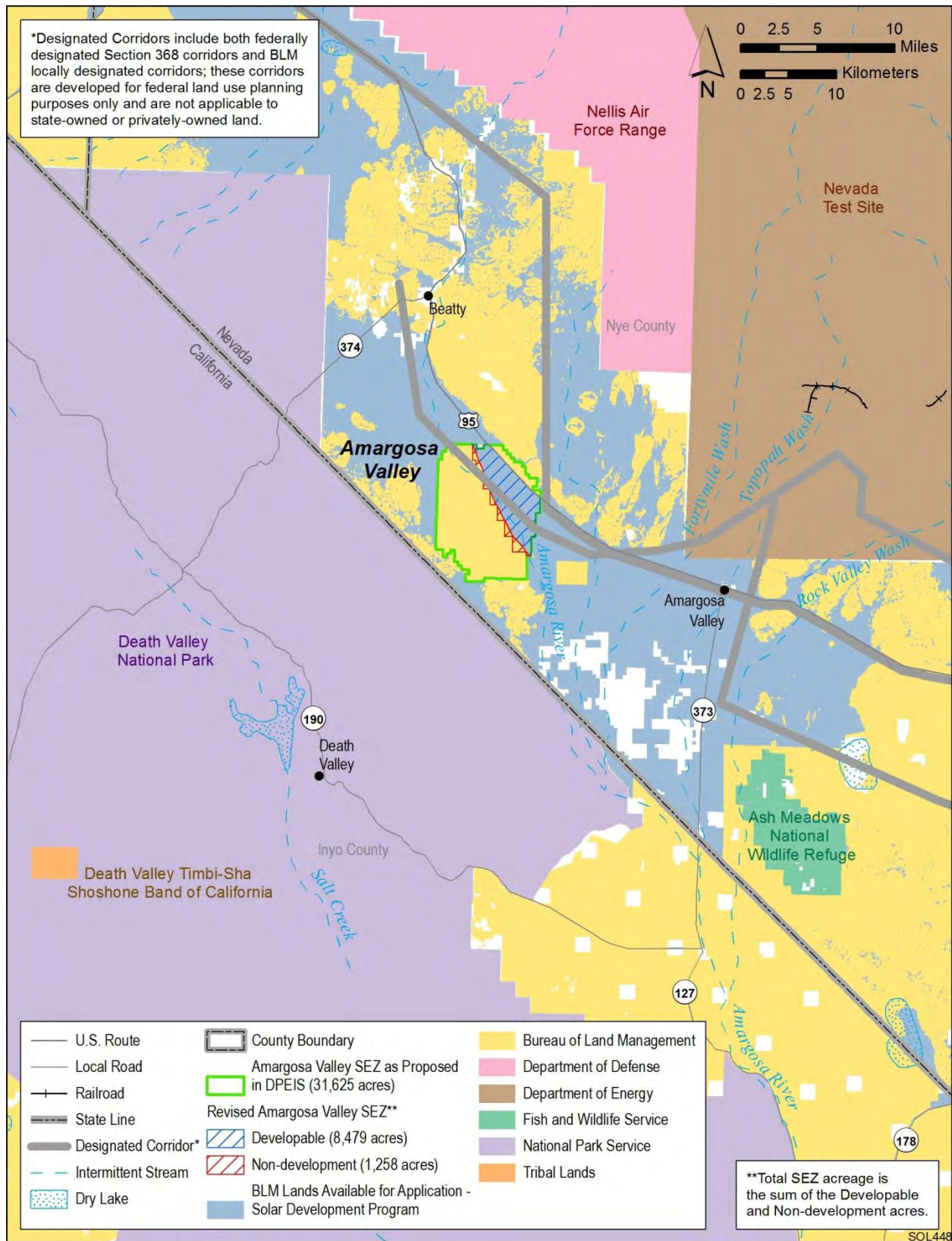
15 16 **11.1 AMARGOSA VALLEY**

17 18 19 **11.1.1 Background and Summary of Impacts**

20 21 22 **11.1.1.1 General Information**

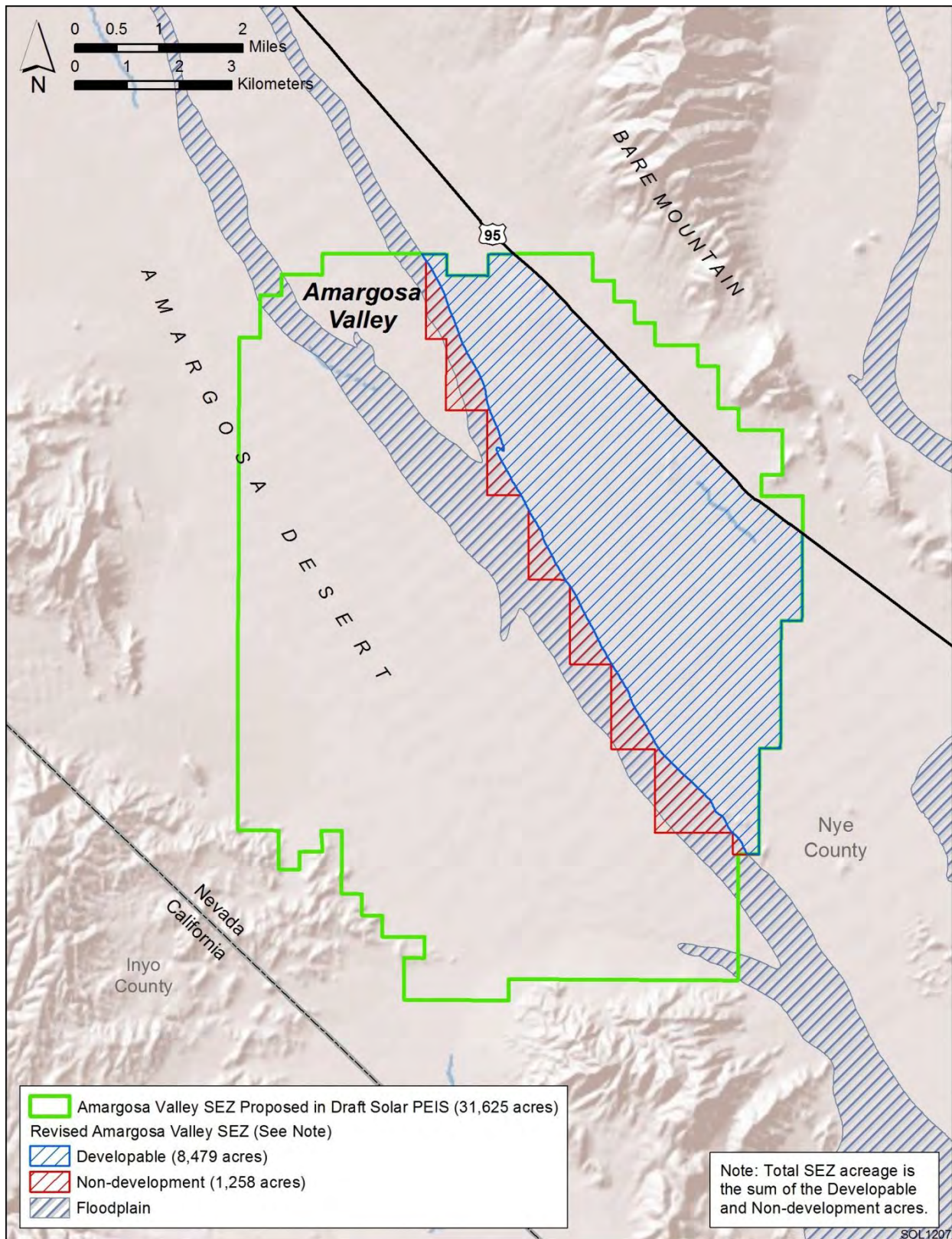
23
24 The proposed Amargosa Valley SEZ is located in Nye County in southern Nevada near
25 the California border. In 2008, the county population was 44,175, while adjacent Clark County
26 to the southeast had a population of 1,879,093. The closest towns to the SEZ are Beatty, about
27 11 mi (18 km) north on U.S. 95, and Amargosa Valley, about 12 mi (20 km) southeast on
28 U.S. 95. Las Vegas is about 84 mi (135 km) southeast. The nearest major road access to the
29 proposed Amargosa Valley SEZ is via U.S. 95, which is adjacent to the northeast boundary
30 of the SEZ. Access to the interior of the SEZ is by dirt roads. The nearest railroad access
31 is approximately 100 mi (161 km) away, and one small airport near Beatty serves the area. The
32 Nevada Test Site (NTS) lies about 10 mi (16 km) east, and the Nellis Air Force Range lies a
33 similar distance northeast of the proposed SEZ. As of October 28, 2011, there was one pending
34 solar application adjacent to the southeast boundary of the SEZ.
35

36 As published in the Draft Solar PEIS, the proposed Amargosa Valley SEZ had a total
37 area of 31,625 acres (128.0 km²). In the Supplement to the Draft Solar PEIS, the size of the
38 proposed Amargosa Valley SEZ was reduced to eliminate the area south and west of the
39 Amargosa River and the area northeast of U.S. 95, a total of 21,888 acres (88.6 km²) (see
40 Figure 11.1.1.1-1). Eliminating these areas is primarily intended to avoid or minimize many
41 potential impacts, including impacts on Death Valley National Park (NP) and the desert tortoise.
42 In addition, 1,258 acres (5.1 km²) of Amargosa River floodplain north of the river but within the
43 SEZ boundaries has been identified as a non-development area (see Figure 11.1.1.1-2); the
44 remaining developable area within the SEZ is 8,479 acres (34.3 km²).
45
46



1

2 **FIGURE 11.1.1.1-1 Proposed Amargosa Valley SEZ as Revised**



1

2 **FIGURE 11.1.1-2 Developable and Non-development Areas for the Proposed Amargosa Valley**
 3 **SEZ as Revised**

1 Because of the extensive potential impacts from solar development in the portion of the
 2 Amargosa Valley SEZ that has been eliminated, those lands are proposed as solar right-of-way
 3 (ROW) exclusion areas; that is, applications for solar development on those lands will not be
 4 accepted by the U.S. Department of the Interior Bureau of Land Management (BLM).
 5

6 The analyses in the following sections update the affected environment and potential
 7 environmental, cultural, and socioeconomic impacts associated with utility-scale solar energy
 8 development in the Amargosa Valley SEZ as described in the Draft Solar PEIS.
 9

10
 11 **11.1.1.2 Development Assumptions for the Impact Analysis**
 12

13 Maximum solar development of the proposed Amargosa Valley SEZ is assumed to
 14 be 80% of the developable SEZ area over a period of 20 years, a maximum of 6,783 acres
 15 (27.4 km²) (Table 11.1.1.2-1). Full development of the Amargosa Valley SEZ would allow
 16 development of facilities with an estimated total of between 754 MW (power tower, dish engine,
 17 or photovoltaic [PV] technologies, 9 acres/MW [0.04 km²/MW]) and 1,357 MW (solar trough
 18 technologies, 5 acres/MW [0.02 km²/MW]) of electrical power capacity.
 19

20 Availability of transmission from SEZs to load centers will be an important consideration
 21 for future development in SEZs. For the proposed Amargosa Valley SEZ, the nearest existing
 22 transmission line as identified in the Draft Solar PEIS is a 138-kV line that runs adjacent to the
 23 SEZ. It is possible that this existing line could be used to provide access from the SEZ to the
 24
 25

26 **TABLE 11.1.1.2-1 Assumed Development Acreages, Solar MW Output, and Nearest**
 27 **Major Access Road and Transmission Line for the Proposed Amargosa Valley SEZ as**
 28 **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	Assumed Area of Road ROW	Distance to Nearest Designated Transmission Corridor ^e
8,479 acres ^a and 6,783 acres	754 MW ^b 1,357 MW ^c	U.S. 95: 0 mi ^d	0 mi and 138 kV	0 acres and 0 acres	0 mi

- a To convert acres to km², 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 km²/MW) of land required.
- c Maximum power output if the SEZ were fully developed using solar trough technologies, assuming 5 acres/MW (0.02 km²/MW) of land required.
- d To convert mi to km, multiply by 1.6093.
- e BLM-designated corridors are developed for federal land use planning purposes only and are not applicable to state-owned or privately owned land.

1 transmission grid, but the capacity of the existing line would not be adequate for 754 to
2 1,357 MW of new capacity. Therefore, at full build-out capacity, new transmission lines and
3 possibly upgrades of existing transmission lines would be required to bring electricity from the
4 proposed Amargosa Valley SEZ to load centers. An assessment of the most likely load center
5 destinations for power generated at the Amargosa Valley SEZ and a general assessment of the
6 impacts of constructing and operating new transmission facilities to those load centers are
7 provided in Section 11.1.23. In addition, the generic impacts of transmission lines and associated
8 infrastructure construction and of line upgrades for various resources are discussed in Chapter 5
9 of this Final Solar PEIS. Project-specific analyses would also be required to identify the specific
10 impacts of new transmission construction and line upgrades for any projects proposed within
11 the SEZ.

12
13 Part of the Amargosa Valley SEZ overlaps a locally designated transmission corridor. For
14 this impact assessment, it is assumed that up to 80% of the proposed SEZ could be developed.
15 This does not take into account the potential limitations to solar development that may result from
16 siting constraints associated with the corridor. The development of solar facilities and the existing
17 corridor will be dealt with by the BLM on a case-by-case basis. See Section 11.1.2.2 for further
18 discussion of impacts on lands and realty.

19
20 For the proposed Amargosa Valley SEZ, U.S. 95 passes along the northeast boundary
21 of the SEZ. Existing road access to the proposed Amargosa Valley SEZ should be adequate to
22 support construction and operation of solar facilities. No additional road construction outside
23 of the SEZ was assumed to be required to support solar development. While there are existing
24 dirt/ranch roads within the SEZ, additional internal road construction would likely be required
25 to support solar facility construction.

26 27 28 **11.1.1.3 Programmatic and SEZ-Specific Design Features**

29
30 The proposed programmatic design features for each resource area to be required under
31 the BLM Solar Energy Program are presented in Section A.2.2 of Appendix A of this Final Solar
32 PEIS. These programmatic design features are intended to avoid, minimize, and/or mitigate
33 adverse impacts from solar energy development and will be required for development on all
34 BLM-administered lands including SEZ and non-SEZ lands.

35
36 The discussions below addressing potential impacts of solar energy development on
37 specific resource areas (Sections 11.1.2 through 11.1.22) also provide an assessment of the
38 effectiveness of the programmatic design features in mitigating adverse impacts from solar
39 development within the SEZ. SEZ-specific design features to address impacts specific to the
40 proposed Amargosa Valley SEZ may be required in addition to the programmatic design
41 features. The proposed SEZ-specific design features for the Amargosa Valley SEZ have been
42 updated on the basis of revisions to the SEZ since the Draft Solar PEIS (such as boundary
43 changes and the identification of non-development areas), and on the basis of comments received
44 on the Draft Solar PEIS and Supplement to the Draft. All applicable SEZ-specific design features
45 identified to date (including those from the Draft Solar PEIS that are still applicable) are
46 presented in Sections 11.1.2 through 11.1.22.

1 **11.1.2 Lands and Realty**

2
3
4 **11.1.2.1 Affected Environment**

5
6 The developable area of the proposed SEZ has been reduced to 8,479 acres (34.3 km²).
7 The northeastern boundary of the proposed SEZ has been moved southwest of Highway 95, and
8 the southwestern boundary has been moved northward a distance of 2.3 to 4.9 mi (3.7 to 7.9 km)
9 from the boundary in the Draft Solar PEIS. Access roads to areas west of the proposed SEZ and
10 a transmission line corridor still pass through the revised proposed SEZ. The proposed SEZ is no
11 longer within the floodplain of the Amargosa River.
12

13
14 **11.1.2.2 Impacts**

15
16 Anticipated full development of the proposed SEZ would be reduced from 25,300 acres
17 (102.4 km²) to 6,783 acres (27.4 km²). Since the SEZ is undeveloped and rural, utility-scale
18 solar energy development would be a new and discordant land use to the area. However, solar
19 development of a pending application adjacent to the SEZ could result in altering the regional
20 land use character prior to development in the SEZ.
21

22 In the Draft Solar PEIS, it was noted that the proximity of the SEZ to National Park
23 Service (NPS) lands to the southwest and topographic features could result in isolated parcels of
24 public land between the SEZ and the NPS lands. This potential impact is no longer a concern
25 because of the change in SEZ boundaries, moving its southern border well away from NPS
26 lands.
27

28 Part of the proposed Amargosa Valley SEZ overlaps a locally designated transmission
29 corridor; this corridor does not currently contain a transmission line. This existing corridor will
30 be used primarily for the siting of transmission lines and other infrastructure such as pipelines.
31 The existing corridor will be the preferred location for any transmission development that is
32 required to support solar development and future transmission grid improvements related to the
33 build-out of the Amargosa Valley SEZ. Any use of the corridor lands within the Amargosa
34 Valley SEZ for solar energy facilities, such as solar panels or heliostats, must be compatible with
35 the future use of the existing corridor. The BLM will assess solar projects in the vicinity of the
36 existing corridor on a case-by-case basis. The BLM will review and approve individual project
37 plans of development to ensure compatible development that maintains the use of the corridor.
38

39
40 **11.1.2.3 SEZ-Specific Design Features and Design Feature Effectiveness**

41
42 Required programmatic design features that would reduce impacts on lands and realty
43 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
44 programmatic design features will provide some mitigation for the identified impacts but would
45 not mitigate all adverse impacts. For example, impacts related to the exclusion of many existing
46 and potential uses of the public land, the visual impact of an industrial-type solar facility within

1 an otherwise rural area, and, should they occur, induced land use changes on state and private
2 lands may not be fully mitigated.

3
4 No SEZ-specific design features for lands and realty have been identified. Some SEZ-
5 specific design features may be established for parcels within the Amargosa Valley SEZ through
6 the process of preparing parcels for competitive offer and subsequent project-specific analysis.
7

8 9 **11.1.3 Specially Designated Areas and Lands with Wilderness Characteristics**

10 11 12 **11.1.3.1 Affected Environment**

13
14 Nine specially designated areas near the proposed Amargosa Valley SEZ that could be
15 affected by solar energy development were discussed in the Draft Solar PEIS: Death Valley NP
16 and Wilderness Area (WA), the California Desert Conservation Area (CDCA), the Ash
17 Meadows National Wildlife Refuge (NWR) and the Devils Hole unit within it, Funeral
18 Mountains WA, Amargosa Mesquite Trees Area of Critical Environmental Concern (ACEC),
19 Amargosa River ACEC, and the Big Dunes ACEC and Special Recreation Management Area
20 (SRMA). The distances to the specially designated areas discussed in this Final Solar PEIS are
21 the same, with the exception of the distance to Death Valley NP and designated wilderness there.
22 The NP boundary now ranges from 5 to 7.5 mi (8 to 12 km) from the boundary of the
23 developable area of the proposed SEZ.
24

25 26 **11.1.3.2 Impacts**

27
28 With the increased distance between the National Park and Wilderness Area and the
29 developable area of the potential SEZ, adverse visual impacts on the National Park and
30 designated wilderness will be somewhat reduced though not eliminated. Glint and glare from
31 solar facilities within the SEZ would still be visible from about 3% of the area within the
32 National Park, primarily designated wilderness. The level of potential visual impacts will be
33 affected by the choice of solar technologies employed and mitigation measures applied and will
34 have to be determined on a project-by-project basis. Potential impacts on night sky viewing
35 would also be reduced but not eliminated.
36

37 In general, the impacts on the other specially designated areas noted in the Draft Solar
38 PEIS have not changed. Impacts from groundwater withdrawals in the Ash Meadows NWR and
39 Devils Hole unit, Amargosa Mesquite Tree ACEC, and the Amargosa River ACEC would be
40 less than those discussed in the Draft Solar PEIS, because the maximum amount of groundwater
41 use at the SEZ has decreased by about 75% (proportional to the decrease in size of the SEZ).
42 More detailed information on potential water issues is contained in Section 11.1.9 of this Final
43 Solar PEIS and of the Draft Solar PEIS.
44
45

1 **11.1.3.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on specially
4 designated areas are described in Section A.2.2 of Appendix A of this Final Solar PEIS
5 (design features for both specially designated areas and visual resources would address impacts).
6 Implementing the programmatic design features will provide some mitigation for the identified
7 impacts. However, some adverse impacts on wilderness characteristics in Death Valley NP and
8 potential impacts on night sky viewing may still occur.
9

10 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
11 analyses due to changes to the SEZ boundaries, and consideration of comments received as
12 applicable, the following SEZ-specific design feature has been identified:
13

- 14 • Water use for any solar energy development should be reviewed to ensure that
15 impacts on Death Valley NP, the NWR, and ACECs would be neutral or
16 positive.
17

18 The need for additional SEZ-specific design features will be identified through the
19 process of preparing parcels for competitive offer and subsequent project-specific analysis.
20
21

22 **11.1.4 Rangeland Resources**
23

24 **11.1.4.1 Livestock Grazing**
25

26 ***11.1.4.1.1 Affected Environment***
27

28 As presented in the Draft Solar PEIS, no grazing allotments overlap the proposed
29 Amargosa Valley SEZ. The revised area of the SEZ does not alter this finding.
30
31

32 ***11.1.4.1.2 Impacts***
33

34 Because the SEZ does not contain any active grazing allotments, solar energy
35 development within the SEZ would have no impact on livestock and grazing.
36
37

38 ***11.1.4.1.3 SEZ-Specific Design Features and Design Feature Effectiveness***
39

40 Because there is no livestock grazing in the proposed SEZ, no SEZ-specific design
41 features to protect livestock grazing have been identified in this Final Solar PEIS.
42
43
44
45

1 **11.1.4.2 Wild Horses and Burros**

2
3
4 ***11.1.4.2.1 Affected Environment***

5
6 As presented in the Draft Solar PEIS, no wild horse or burro herd management areas
7 (HMAs) occur within the proposed Amargosa Valley SEZ or in close proximity to it. The revised
8 developable area of the SEZ does not alter this finding.
9

10
11 ***11.1.4.2.2 Impacts***

12
13 Solar energy development within the revised area of the proposed Amargosa Valley SEZ
14 would not affect wild horses and burros.
15

16
17 ***11.1.4.2.3 SEZ-Specific Design Features and Design Feature Effectiveness***

18
19 Because solar energy development within the proposed Amargosa Valley SEZ would not
20 affect wild horses and burros, no SEZ-specific design features to address wild horses and burros
21 have been identified in this Final Solar PEIS.
22

23
24 **11.1.5 Recreation**

25
26
27 ***11.1.5.1 Affected Environment***

28
29 As stated in the Draft Solar PEIS, off-highway vehicle (OHV) use is likely the major
30 recreational activity in the area of the proposed Amargosa Valley SEZ. A designated route that
31 accommodates desert racing and commercial tours still passes through the SEZ as revised.
32

33
34 ***11.1.5.2 Impacts***

35
36 Impacts described in the Draft Solar PEIS are still accurate, although the modified
37 boundary for the proposed SEZ will result in reducing the amount of potential impact on
38 recreational uses. Recreational use would be excluded from any area developed for solar energy
39 production, and the same types of impacts as described in the Draft Solar PEIS would still occur.
40 The route used by desert racing and commercial tours would be adversely affected by solar
41 development within the SEZ. There would be less impact on potential OHV recreation than that
42 described in the Draft Solar PEIS since the area of the SEZ has been reduced. The area removed
43 from the SEZ is designated as “limited to existing roads, trails, and washes” for OHVs and
44 would continue to be available for this use. The most convenient access roads to public lands
45 west of the SEZ still cross within the revised SEZ boundary, and access to those lands could
46 become more difficult.

1 In addition, lands that are outside of the proposed SEZ may be acquired or managed for
2 mitigation of impacts on other resources (e.g., sensitive species). Managing these lands for
3 mitigation could further exclude or restrict recreational use, potentially leading to additional
4 losses in recreational opportunities in the region. The impact of acquisition and management of
5 mitigation lands would be considered a part of the environmental analysis of specific solar
6 energy projects.
7
8

9 **11.1.5.3 SEZ-Specific Design Features and Design Feature Effectiveness**

10 Required programmatic design features that would reduce impacts on recreational are
11 described in Section A.2.2 of Appendix A of this Final Solar PEIS; however, implementing the
12 programmatic design features for recreation will not mitigate the loss of recreational access to
13 public lands developed for solar energy production or the loss of wildlife-related hunting
14 recreation. Implementing the programmatic design features for visual impacts will help minimize
15 recreational impacts of individual solar projects on surrounding areas used by recreationists.
16
17

18 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
19 analyses due to changes to the SEZ boundaries, and consideration of comments received as
20 applicable, the following SEZ-specific design feature for recreation has been identified:
21

- 22 • Relocation of the designated route used for desert racing and commercial
23 tours should be considered at the time specific solar development proposals
24 are analyzed.
25

26 The need for additional SEZ-specific design features will be identified through the
27 process of preparing parcels for competitive offer and subsequent project-specific analysis.
28
29

30 **11.1.6 Military and Civilian Aviation**

31 32 33 **11.1.6.1 Affected Environment**

34 Although the area within the proposed SEZ has been reduced, the remaining area is still
35 completely covered by military training routes (MTRs). One of the training routes has an
36 operating elevation from ground level up to 9,400 ft (2,865 m) mean sea level (MSL). The
37 information on affected environment given in the Draft Solar PEIS remains valid.
38
39

40 41 **11.1.6.2 Impacts**

42 Impacts described in the Draft Solar PEIS remain valid and have been updated with
43 additional input from the U.S. Department of Defense (DoD). Impacts include the following:
44
45

- 1 • MTR airspace is authorized by the Federal Aviation Administration (FAA)
2 and utilized by DoD aircraft from the surface to 9,400 ft MSL. The proposed
3 SEZ encompasses the entire route. Glare and heat emissions produced by
4 certain types of solar technologies may present both flight and ground safety
5 concerns.
6
- 7 • Light from solar energy facilities could affect DoD nighttime operations.
8

9 Through comments on the Draft Solar PEIS and the Supplement to the Draft, the DoD
10 expressed concern for solar energy facilities that might affect military test and training
11 operations. The DoD requested that the technology at the proposed Amargosa Valley SEZ be
12 restricted to low-profile, low-glare PV technologies under 50 ft (15 m) above ground level
13 (AGL), similar to the PV I Array at Nellis Air Force Base.
14

15 16 **11.1.6.3 SEZ-Specific Design Features and Design Feature Effectiveness** 17

18 Required programmatic design features that would reduce impacts on military and
19 civilian aviation are described in Section A.2.2 of Appendix A of this Final Solar PEIS. The
20 programmatic design features require early coordination with the DoD to identify and avoid,
21 minimize, and/or mitigate, if possible, potential impacts on the use of military airspace and
22 military testing activities.
23

24 No SEZ-specific design features to address impacts on military and civilian aviation have
25 been identified in this Final Solar PEIS. Some SEZ-specific design features may be identified
26 through the process of preparing parcels for competitive offer and subsequent project-specific
27 analysis.
28

29 30 **11.1.7 Geologic Setting and Soil Resources** 31

32 33 **11.1.7.1 Affected Environment** 34

35 36 ***11.1.7.1.1 Geologic Setting*** 37

38 Data provided in the Draft Solar PEIS remain valid, with the following update:
39

- 40 • The terrain of the proposed Amargosa Valley SEZ slopes gently to the
41 southeast (Figure 11.1.7.1-1). The boundaries of the proposed SEZ have
42 been changed to eliminate the area south and west of the Amargosa River
43 floodplain and the area northeast of U.S. 95. Within this revised area,
44 1,258 acres (5.1 km²) of Amargosa River floodplain were identified as
45 non-development areas. Based on these changes, the elevations range from
46 about 2,800 ft (850 m) in the northwest corner to about 2,540 ft (775 m) in
47 the southeast corner.

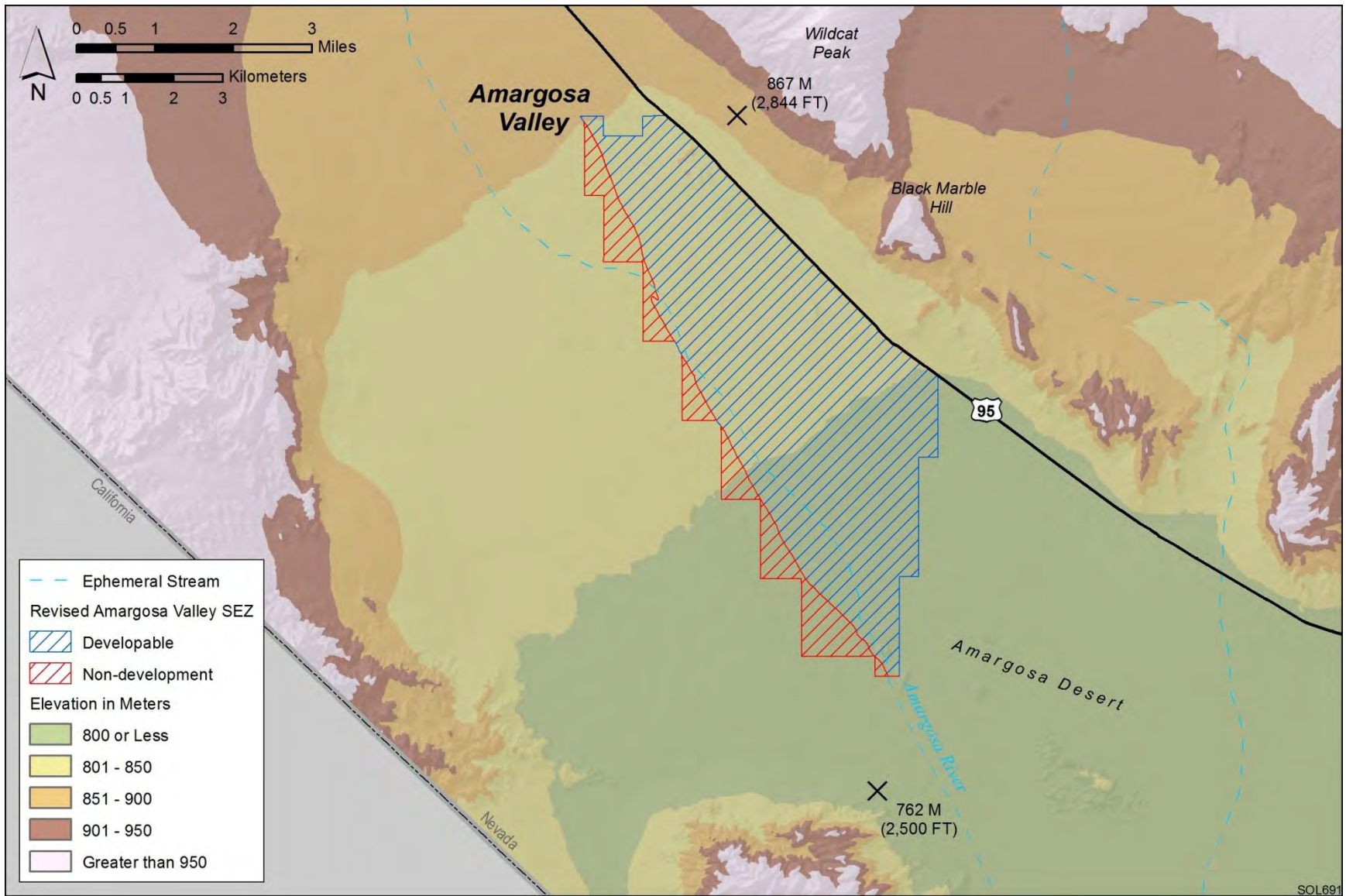


FIGURE 11.1.7.1-1 General Terrain of the Proposed Amargosa Valley SEZ as Revised

1 **11.1.7.1.2 Soil Resources**

2
3 Data provided in the Draft Solar PEIS remain valid, with the following updates:

- 4
5 • Soils within the proposed Amargosa Valley SEZ as revised are predominantly
6 the gravelly sandy loams and gravelly loams of the Yermo, hot-Yermo, and
7 Arizo Series, which now make up about 94% of the soil coverage at the site
8 (Table 11.1.7.1-1).
- 9
10 • Soil unit coverage at the proposed Amargosa Valley SEZ as revised is shown
11 in Figure 11.1.7.1-2. The designation of new SEZ boundaries and non-
12 development areas eliminates 17,407 acres (70 km²) of the Yermo, hot-
13 Yermo–Arizo association; 3,883 acres (16 km²) of the Arizo very gravelly
14 sandy loam; 761 acres (3.1 km²) (all) of the Arizo–Crobilt–Commski
15 association; 182 acres (0.74 km²) of the Rock outcrop–Upspring–Rubble land
16 complex; and 768 acres (3.1 km²) of the Yermo–Greyeagle–Arizo association.

17
18
19 **11.1.7.2 Impacts**

20
21 Impacts on soil resources would occur mainly as a result of ground-disturbing activities
22 (e.g., grading, excavating, and drilling), especially during the construction phase of a solar
23 project. Because impacts on soil resources result from ground-disturbing activities in the project
24 area, soil impacts would be roughly proportional to the size of a given solar facility, with larger
25 areas of disturbed soil having a greater potential for impacts than smaller areas (Section 5.7.2).
26 The assessment provided in the Draft Solar PEIS remains valid, with the following update:

- 27
28 • Impacts related to wind erodibility are reduced because the identification of
29 new SEZ boundaries and non-development areas eliminates 22,188 acres
30 (90 km²) of moderately erodible soils from development.

31
32
33 **11.1.7.3 SEZ-Specific Design Features and Design Feature Effectiveness**

34
35 Required programmatic design features that would reduce impacts on soils are described
36 in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design
37 features will reduce the potential for soil impacts during all project phases.

38
39 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
40 analyses due to changes to the SEZ boundaries, and consideration of comments received as
41 applicable, no SEZ-specific design features for soil resources were identified at the Amargosa
42 Valley SEZ. Some SEZ-specific design features may ultimately be identified through the process
43 of preparing parcels for competitive offer and subsequent project-specific analysis.

1 **TABLE 11.1.7.1-1 Summary of Soil Map Units within the Proposed Amargosa Valley SEZ as Revised**

Map Unit Symbol	Map Unit Name	Erosion Potential		Description	Area in Acres ^c (percentage of SEZ)
		Water ^a	Wind ^b		
2054	Yermo, hot–Yermo–Arizo association (2 to 4% slopes)	Low (0.05)	Moderate (WEG 5) ^d	Consists of about 30% Yermo stratified extremely gravelly sandy loam to gravelly loam, 40% hot-Yermo very gravelly sandy loam, and 15% Arizo very gravelly sandy loam. Level to nearly level soils on inset fans and fan remnants. Parent material is alluvium from mixed sources. Deep to very deep and well to excessively drained, with moderate surface-runoff potential and moderately rapid to very rapid permeability. Available water capacity is low. Slight rutting hazard. Used mainly as rangeland and wildlife habitat; unsuitable for cultivation.	8,068 (82.9) ^e
2152	Arizo very gravelly sandy loam, moist (0 to 2% slopes)	Low (0.10)	Moderate (WEG 5)	Level to nearly level soils on inset fans and floodplains. Parent material is alluvium from mixed sources. Deep to very deep, well to excessively drained, with low surface-runoff potential (high infiltration rate) and rapid to very rapid permeability. Available water capacity is low. Slight rutting hazard. Used mainly as rangeland and wildlife habitat; unsuitable for cultivation.	656 (6.7) ^f
2393	Commski–Yermo association	Low (0.15)	Moderate (WEG 5)	Consists of 70% Commski very gravelly fine sandy loam and 25% Yermo stratified extremely gravelly sandy loam to gravelly loam. Nearly level soils formed on inset fans and fan remnants. Parent material consists of alluvium derived from mixed sources, including limestone and dolomite. Moderately deep and well drained, with moderate surface runoff potential and moderate to very rapid permeability. Low resistance to compaction. Available water capacity is high. Slight rutting hazard. Used mainly as rangeland and wildlife habitat; unsuitable for cultivation.	458 (4.7)

TABLE 11.1.7.1-1 (Cont.)

Map Unit Symbol	Map Unit Name	Erosion Potential		Description	Area in Acres ^c (percentage of SEZ)
		Water ^a	Wind ^b		
2151	Arizo–Bluepoint–Dune land complex (0 to 4% slopes)	Low (0.10)	Moderate (WEG 5)	Consists of 40% Arizo very gravelly sandy loam, 35% Bluepoint loamy fine sand, and 15% Dune land fine sand. Level to nearly level soils on inset fans, sand sheets, and dunes. Parent material consists of alluvium from mixed sources and eolian sands. Deep to very deep and somewhat excessively to excessively drained, with low surface-runoff potential (high infiltration rate) and rapid to very rapid permeability. Available water capacity is low. Moderate rutting hazard. Used mainly as rangeland and wildlife habitat; unsuitable for cultivation.	415 (1) ^g
2020	Weiser–Canoto association	Low (0.15)	Moderate (WEG 5)	Consists of 70% Weiser extremely gravelly loam and 25% Canoto very gravelly sandy loam. Nearly level soils on fan remnants. Parent material consists of alluvium from limestone and dolomite. Very deep and well drained, with moderate infiltration and moderate to moderately rapid permeability. Available water capacity is low. Slight rutting hazard. Used mainly as rangeland, forestland, and wildlife habitat; unsuitable for cultivation.	57 (<1)
2002	Rock outcrop-Upspring–Rubble land complex (8 to 75% slopes)	Not rated	Not rated	Consists of 45% rock outcrop, 30% Upspring very gravelly sandy loam, and 15% rubble land fragments. Steeply sloping soils on hills. Very shallow and somewhat excessively to excessively drained. Parent material (Upspring) consists of colluvium from volcanic rocks over residuum weathered from volcanic rocks. Available water capacity is very low. Slight rutting hazard. Upspring soils used mainly for watershed, wildlife habitat, and recreation land.	46 (<1) ^h

TABLE 11.1.7.1-1 (Cont.)

Map Unit Symbol	Map Unit Name	Erosion Potential		Description	Area in Acres ^c (percentage of SEZ)
		Water ^a	Wind ^b		
2053	Yermo–Greyeagle–Arizo association	Low (0.05)	Moderate (WEG 5)	Consists of 60% Yermo stratified extremely gravelly sandy loam to gravelly loam, 20% Greyeagle very gravelly sandy loam, and 15% Arizo very stony sandy loam. Sloping soils on alluvial fans, inset fans, and fan remnants. Parent material consists of alluvium from mixed sources. Shallow to moderately deep and well to excessively drained, with moderate surface runoff potential and moderately rapid to very rapid permeability. Available water capacity is very low to low. Slight rutting hazard. Used mainly as rangeland, wildlife habitat, and recreation land; unsuitable for cultivation.	36 (<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.
- ^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 acres to km², multiply by 0.004047.
- ^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 5, 56 tons (51 metric tons) per acre (4,000 m²) per year.
- ^e A total of 674 acres (2.7 km²) within the Yermo, hot–Yermo–Arizo association is currently categorized as a non-development area (denoted by red areas in Figure 11.1.7.1-2).
- ^f A total of 578 acres (2.3 km²) within the Arizo very gravelly sandy loam is currently categorized as a non-development area (denoted by red areas in Figure 11.1.7.1-2).

Footnotes continued on next page.

TABLE 11.1.7.1-1 (Cont.)

- ^g A total of 4 acres (0.016 km²) within the Arizo–Bluepoint–Dune land complex is currently categorized as a non-development area (denoted by red areas in Figure 11.1.7.1-2).
- ^h A total of 2 acres (0.008 km²) within the Rock Outcrop–Upspring–Rubble land complex is currently categorized as a non-development area (denoted by red areas in Figure 11.1.7.1-2).

Source: NRCS (2010).

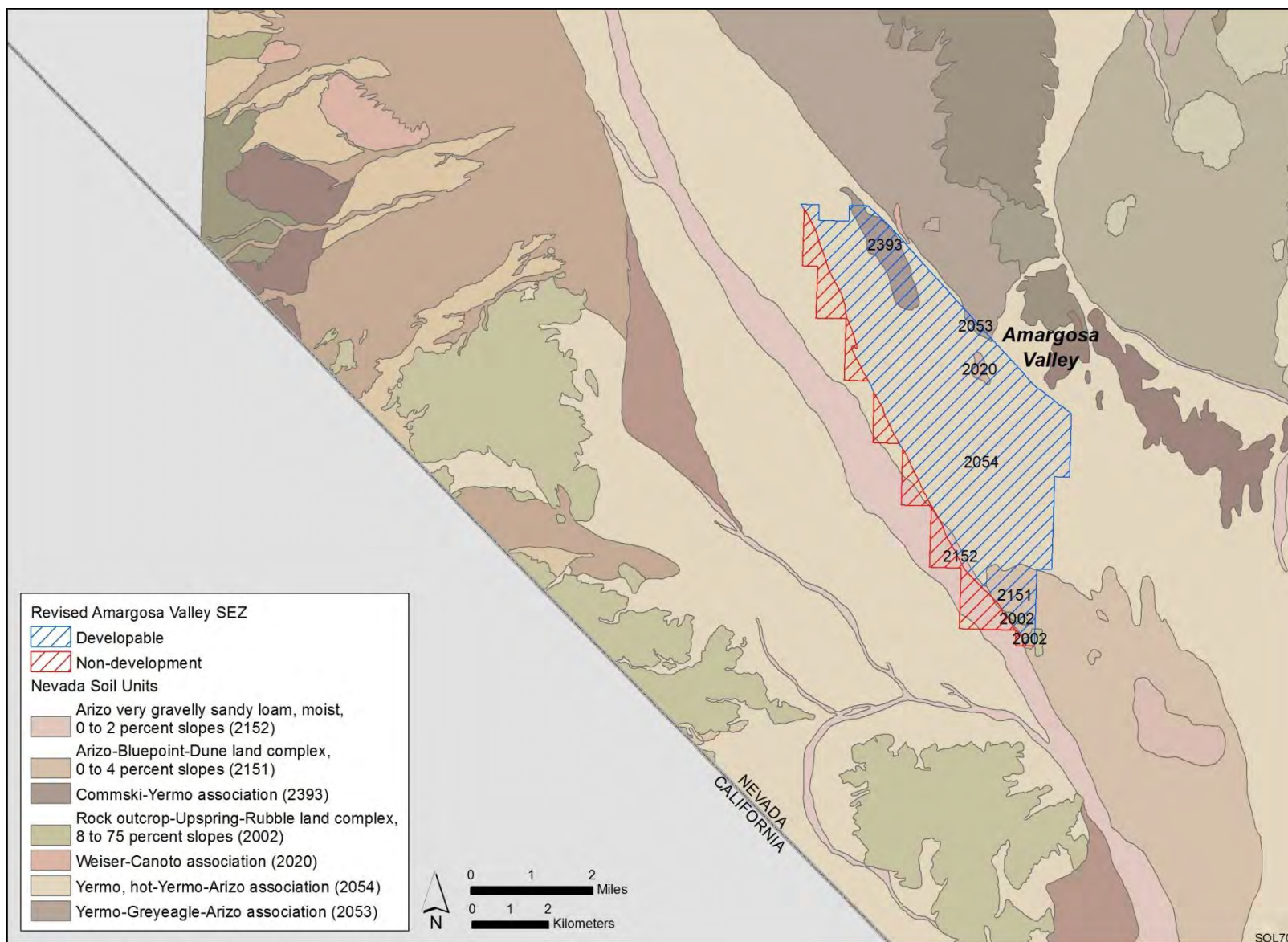


FIGURE 11.1.7.1-2 Soil Map for the Proposed Amargosa Valley SEZ as Revised (NRCS 2008)

1 **11.1.8 Minerals (Fluids, Solids, and Geothermal Resources)**
2

3 A mineral potential assessment for the proposed Amargosa Valley SEZ has been
4 prepared and reviewed by BLM mineral specialists knowledgeable about the region where the
5 SEZ is located (BLM 2012a). The BLM is proposing to withdraw the SEZ from settlement, sale,
6 location, or entry under the general land laws, including the mining laws, for a period of 20 years
7 (see Section 2.2.2.2.4 of the Final Solar PEIS). The potential impacts of this withdrawal are
8 discussed in Section 11.1.24.
9

10
11 **11.1.8.1 Affected Environment**
12

13 The description in the Draft Solar PEIS remains valid. There are no mining claims
14 located in the proposed Amargosa Valley SEZ (as of September 2010). The land of the SEZ was
15 closed to locatable mineral entry in June 2009; however, the area remains open for discretionary
16 mineral leasing for oil and gas and other leasable minerals and for disposal of salable minerals.
17

18
19 **11.1.8.2 Impacts**
20

21 The description in the Draft Solar PEIS remains valid. If the area is identified as an SEZ,
22 it will continue to be closed to all incompatible forms of mineral development. Since the SEZ
23 does not contain existing mining claims, it is assumed there would be no future loss of locatable
24 mineral production. Some future development of oil and gas resources beneath the SEZ would be
25 possible, and production of common minerals could take place in areas not directly developed
26 for solar energy production.
27

28
29 **11.1.8.3 SEZ-Specific Design Features and Design Feature Effectiveness**
30

31 Required programmatic design features that would reduce impacts on mineral resources
32 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
33 programmatic design features will provide adequate protection of mineral resources.
34

35 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
36 analyses due to changes to the SEZ boundaries, and consideration of comments received as
37 applicable, no SEZ-specific design features to address impacts on minerals have been identified
38 in this Final Solar PEIS. Some SEZ-specific design features may be identified through the
39 process of preparing parcels for competitive offer and subsequent project-specific analysis.
40

41
42 **11.1.9 Water Resources**
43

44
45 **11.1.9.1 Affected Environment**
46

47 The overall size of the proposed Amargosa Valley SEZ has been reduced by 69% from
48 the area described in the Draft Solar PEIS, resulting in a total area of 9,737 acres (39.4 km²). The

1 description of the affected environment given in the Draft Solar PEIS relevant to water resources
2 at the proposed Amargosa Valley SEZ remains valid and is summarized in the following
3 paragraphs.
4

5 The Amargosa Valley SEZ is within the Northern Mojave–Mono Lake subbasin of the
6 California hydrologic region. The SEZ is located near the bottom of Bare Mountain, with the
7 Funeral Mountains to the south and the Grapevine Mountains to the west. The average
8 precipitation and snowfall is about 4 in./yr (10 cm/yr) and 3 in./yr (8 cm/yr), respectively, and
9 the estimated pan evaporation rate is about 93 in./yr (236 cm/yr). There are no perennial surface
10 water features within the SEZ. The Amargosa River is a wide feature of braided, intermittent
11 stream channels that flows from the northwest to the southeast through the valley. Several
12 unnamed intermittent/ephemeral washes run from northwest to southeast through the SEZ. The
13 100-year floodplain of the Amargosa River forms the southwestern boundary of the SEZ;
14 1,258 acres (5.1 km²) are identified as non-development areas and fall within the floodplain.
15 Most of the SEZ is classified as having minimal to moderate flood hazard potential and is within
16 a 500-year floodplain. Several important surface water features within the Amargosa Valley are
17 located to the south and southeast of the SEZ and include the wetland, streams, and springs
18 associated with Ash Meadows NWR, Devils Hole, and Death Valley NP, as well as the wild and
19 scenic river reach of the Amargosa River located 56 mi (90 km) to the southeast in California.
20

21 The Amargosa Valley SEZ is part of the Amargosa Desert groundwater basin, where the
22 groundwater resources consist of a basin-fill aquifer composed of river channel, playa, alluvial
23 fan, freshwater limestone, and conglomerate deposits of fine-grained material (playa and
24 limestone units) to well-sorted clays to gravels (river channel, alluvial fan, and conglomerate
25 units). The basin-fill aquifer in the northern portion of the Amargosa Desert groundwater
26 basin in the vicinity of the SEZ is approximately 1,500 ft (457 m) thick and is underlain by
27 non-carbonate bedrock material. The southern portion of the Amargosa Desert groundwater
28 basin is underlain by carbonate rock aquifers that are a part of the regional-scale carbonate rock
29 province that covers a large portion of eastern Nevada and western Utah. Groundwater flow in
30 the basin-fill aquifer in the northern portion of the Amargosa Desert groundwater basin is from
31 the northwest to the southeast with groundwater surface elevations ranging from 2,349 to
32 2,470 ft (716 to 753 m). Complex faulting occurs near the transition of non-carbonate bedrock to
33 the carbonate rock province, which creates a juxtaposition between low-permeability basin-fill
34 deposits and the highly permeable carbonate rock aquifers near the vicinity of the Ash Meadows
35 NWR. The carbonate rock aquifers in the vicinity of the Ash Meadows NWR are a part of an
36 interbasin groundwater system that flows from northeast to southwest and discharges to
37 numerous springs within the Ash Meadows NWR and the collapsed limestone cavern and
38 geothermal pool at Devils Hole. Historical groundwater withdrawals in the basin-fill aquifers of
39 the Amargosa Desert groundwater basin have been linked to water level declines at Devils Hole
40 and springs within the Ash Meadows NWR, which demonstrates the connectivity between the
41 basin-fill and carbonate rock aquifers. Groundwater recharge occurs primarily from mountain
42 front recharge ranging from 600 to 1,200 ac-ft/yr (740,000 to 1.5 million m³/yr), infiltration from
43 the Amargosa River on the order of 90 ac-ft/yr (111,000 m³/yr), and discharge from the
44 carbonate rock aquifers, with estimates ranging from 19,000 to 44,000 ac-ft/yr (23.4 million to
45 54.3 million m³/yr). Evapotranspiration rates in the Amargosa Desert groundwater basin from
46 phreatophytes, bare soils, and surface springs are on the order of 17,000 to 24,000 ac-ft/yr

1 (21 million to 29.6 million m³/yr). Groundwater quality varies in the Amargosa Desert Valley
2 but is generally good except for elevated total dissolved solids (TDS), arsenic, fluoride, and
3 sulfate concentrations.
4

5 All waters in Nevada are public property and the Nevada Division of Water Resources
6 (NDWR) is the agency responsible for managing both surface and groundwater resources. The
7 Amargosa Desert Basin is overallocated, with its perennial yield set at 24,000 ac-ft/yr
8 (29.6 million m³/yr), of which 17,000 ac-ft/yr (21 million m³/yr) is committed to the USFWS
9 and more than 25,000 ac-ft/yr (30.8 million m³/yr) to beneficial uses. In 2009, the actual
10 amount of groundwater withdrawals totaled 16,380 ac-ft/yr (22 million m³/yr). Groundwater
11 management in the Amargosa Desert groundwater basin is largely affected by the U.S. Supreme
12 Court Decision of *Cappaert v. U.S.* (1976), State Engineer's Order 724 (NDWR 1979), State
13 Engineer's Ruling 5750 (NDWR 2007), and State Engineer's Order 1197 (NDWR 2008). These
14 water management decisions were initiated in 1979 to protect the USFWS's senior water right,
15 which is used to protect spring discharges in the Ash Meadows NWR and Devils Hole; the latest
16 Order 1197 (NDWR 2008) stated that new water right applications in the Amargosa Desert Basin
17 would be denied, as would any application seeking to change the point of diversion closer to
18 Devils Hole defined by a 25-mi (40-km) radius around Devils Hole. Solar developers seeking
19 water rights in the Amargosa Desert groundwater basin will have to purchase and transfer
20 existing water rights. In addition, given the overallocated status of the basin and critical
21 groundwater dependency of the Ash Meadows NWR and Devils Hole, it is likely that water right
22 transfers would have to be moved away from Devils Hole and possibly include the transfer and
23 retirement of water rights to help alleviate the overallocation of the basin.
24

25 In addition to the water resources information provided in the Draft Solar PEIS, this
26 section provides a planning-level inventory of available climate, surface water, and groundwater
27 monitoring stations within the immediate vicinity of the Amargosa Valley SEZ and surrounding
28 basin. Additional data regarding climate, surface water, and groundwater conditions are
29 presented in Tables 11.1.9.1-1 through 11.1.9.1-7 and in Figures 11.1.9.1-1 and 11.1.9.1-2.
30 Fieldwork and hydrologic analyses to determine jurisdictional water bodies would need to be
31 coordinated with appropriate federal, state, and local agencies. Areas within the Amargosa
32 Valley SEZ determined to be jurisdictional will be subject to the permitting process described in
33 the Clean Water Act (CWA).
34
35

36 **11.1.9.2 Impacts**

37 38 39 ***11.1.9.2.1 Land Disturbance Impacts on Water Resources***

40
41 The discussion of land disturbance effects on water resources in the Draft Solar PEIS
42 remains valid. As stated in the Draft Solar PEIS, land disturbance impacts in the vicinity of the
43 Amargosa Valley SEZ could potentially affect drainage patterns, intermittent flows in the
44 Amargosa River, ecological habitats, and groundwater recharge processes. The alteration of
45 natural drainage pathways during construction can lead to impacts related to flooding, loss of
46 water delivery to downstream regions, and alterations to riparian vegetation and habitats. The

1 **TABLE 11.1.9.1-1 Watershed and Water Management Basin**
 2 **Information Relevant to the Proposed Amargosa Valley SEZ as**
 3 **Revised**

Basin	Name	Area (acres) ^b
Subregion (HUC4) ^a	Northern Mojave–Mono Lake (1809)	18,088,041
Cataloging unit (HUC8)	Upper Amargosa (18090202)	2,163,114
Groundwater basin	Amargosa Desert	573,440
SEZ	Amargosa Valley	9,737

^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 km², multiply by 0.004047.

4
 5
 6 change in the SEZ boundaries and identification of non-development areas has removed regions
 7 of the Amargosa River and its associated 100-year floodplain from the SEZ, which reduces the
 8 potential for adverse impacts.
 9

10 Land clearing, land leveling, and vegetation removal during the development of the SEZ
 11 have the potential to disrupt intermittent/ephemeral stream channels. Several programmatic
 12 design features described in Section A.2.2 of Appendix A of this Final Solar PEIS would avoid,
 13 minimize, and/or mitigate impacts associated with the disruption of intermittent/ephemeral water
 14 features. Additional analyses of intermittent/ephemeral streams are presented in this update,
 15 including an evaluation of functional aspects of stream channels with respect to groundwater
 16 recharge, flood conveyance, sediment transport, geomorphology, and ecological habitats. Only a
 17 summary of the results from these surface water analyses is presented in this section; more
 18 information on methods and results is presented in Appendix O.
 19

20 The study region considered for the intermittent/ephemeral stream evaluation relevant to
 21 the Amargosa Valley SEZ is a subset of the Upper Amargosa watershed (HUC8), for which
 22 information regarding stream channels is presented in Tables 11.1.9.1-3 and 11.1.9.1-4 of this
 23 Final Solar PEIS. The results of the intermittent/ephemeral stream evaluation are shown in
 24 Figure 11.1.9.2-1, which depicts flow lines from the National Hydrography Dataset
 25 (USGS 2012a) labeled as having low, moderate, and high sensitivity to land disturbance. Within
 26 the study area, 8% of the intermittent/ephemeral stream channels had low sensitivity, 79% had
 27 moderate sensitivity, and 13% had high sensitivity to land disturbance. Of the stream channels
 28 located within the SEZ, the majority were classified as moderately sensitive, with a few highly
 29 sensitive reaches located along the Amargosa River and along the northern boundary of the SEZ
 30 (Figure 11.1.9.2-1).
 31
 32

TABLE 11.1.9.1-2 Climate Station Information Relevant to the Proposed Amargosa Valley 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.)
Amargosa Farms Garey, Nevada (260150)	2,450	15	1965–2011	4.40	0.30
Beatty, Nevada (260714)	3,304	14	1917–1972	4.24	3.40
Lathrop Wells 16 SSE, Nevada	2,182	27	1970–1977	3.37	0

^a National Weather Service’s Cooperative Station Network station identification code.

^b Surface elevations for the proposed Amargosa Valley SEZ range from 2,500 to 2,825 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 11.1.9.1-3 Total Lengths of Selected Streams at the Subregion, Cataloging Unit, and SEZ-scale Relevant to the Proposed Amargosa Valley SEZ as Revised

Water Feature	Subregion, HUC4 (ft) ^a	Cataloging Unit, HUC8 (ft)	SEZ (ft)
Unclassified streams	60,802	0	0
Perennial streams	12,296,888	353,101	0
Intermittent/ephemeral streams	334,367,739	42,604,594	239,371
Canals	2,932,127	206,939	0

^a To convert ft to m, multiply by 0.3048.

Source: USGS (2012a).

TABLE 11.1.9.1-4 Stream Discharge Information Relevant to the Proposed Amargosa Valley SEZ as Revised

Parameter	Monitoring Station (USGS ID)		
	Amargosa River near Beatty, Nevada (10251220)	Carson Slough at Ash Meadows, Nevada (10251275)	Big Spring (362230116162001)
Period of record	1993–2000	1993–1997	1916–1993
No. of observations	3	34	94
Discharge, median (ft ³ /s) ^a	0.422	1.05	2.08
Discharge, range (ft ³ /s)	0.03–40	0.019–7.93	1.51–2.49
Discharge, most recent observation (ft ³ /s)	40	0.019	2.23
Distance to SEZ (mi) ^b	12	26	32

^a To convert ft³ to m³, multiply by 0.0283.

^b To convert mi to km, multiply by 1.6093.

Source: USGS (2012b).

11.1.9.2.2 Water Use Requirements for Solar Energy Technologies

Changes to the Amargosa Valley SEZ boundaries resulted in a reduction in the estimated water use requirements (Table 11.1.9.2-1). This section examines the updated water use estimates relative to additional analyses of groundwater resources. 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.

1 **TABLE 11.1.9.1-5 Surface Water Quality Data Relevant to the Proposed Amargosa**
 2 **Valley SEZ as Revised**

Parameter	Station (USGS ID) ^a		
	10251220	362230116162001	361910116224201
Period of record	1993	1987–1996	1988–1993
No. of records	1	6	3
Temperature (°C) ^b	NA ^c	27.5 (27–31.5)	9.5 (8–11)
Turbidity (nephelometric turbidity units)	NA	0.6 (0.4–2)	NA
Dissolved oxygen (mg/L)	NA	3.8	NA
pH	NA	7.4 (7.3–7.5)	NA
Total nitrogen (mg/L)	NA	0.38 (0.32–0.44)	NA
Phosphorus (mg/L as P)	NA	0.01	NA
Organic carbon (mg/L)	NA	0.4 (0.1–0.5)	NA
Calcium (mg/L)	32	43 (41–44)	19 (9–20)
Magnesium (mg/L)	5.3	18 (18–19)	17 (6.7–51)
Sodium (mg/L)	540	96 (93–100)	310 (210–650)
Chloride (mg/L)	230	27 (23–31)	150 (84–250)
Sulfate (mg/L)	360	110 (110–120)	390 (210–780)
Arsenic (µg/L)	NA	27 (3–29)	NA

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

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

^c NA = no data collected for this parameter.

Source: USGS (2012b).

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The estimated total water use requirements during the peak construction year are as high as 1,629 ac-ft/yr (2 million m³/yr). The total annual water requirements for operations were categorized as low, medium, and high groundwater pumping scenarios that represent full build-out of the SEZ assuming PV, dry-cooled parabolic trough, and wet-cooled parabolic trough, respectively (a 30% operational time was considered for all the solar facility types on the basis of operations estimates for proposed utility-scale solar energy facilities). This categorization results in water use estimates that range from 39 to 6,802 ac-ft/yr (48,100 to 8.4 million m³/yr), or a total of 780 to 136,040 ac-ft (962,100 to 168 million m³) over the 20-year analysis period.

A basin-scale groundwater budget was assembled by using available data on groundwater inputs, outputs, and storage (Table 11.1.9.2-2) for comparison with water use estimates relating to solar energy development. The groundwater budget includes the perennial yield value set by the NDWR in order to guide water right allocations. The peak construction year water requirements represent 4% of the total groundwater inputs and 7% of the perennial yield of the Amargosa Desert Basin. Given the short duration of construction activities, impacts associated with the construction water demand are considered minimal. The long duration of groundwater pumping during operations (20 years) poses a greater threat to groundwater resources. The high

1
2

TABLE 11.1.9.1-6 Water Quality Data from Groundwater Samples Relevant to the Proposed Amargosa Valley SEZ as Revised

Parameter	Station (USGS ID) ^a		
	363835116234001	364556116413501	362835116264102
Period of record	1991–1998	1989–1999	1992–1998
No. of records	12	3	10
Temperature (°C) ^b	26 (25–28.5)	28.5	23.5 (22–31)
Total dissolved solids (mg/L)	376 (367–385)	NA	254 (252–256)
Dissolved oxygen (mg/L)	5.5 (5.1–5.7)	5.4	5.6 (5.4–5.9)
pH	8 (7.8–8.1)	7.5	8 (7.8–8.1)
Nitrate + nitrite (mg/L as N)	2.17 (2.1–2.2)	0.22	1.64 (1.6–1.68)
Phosphate (mg/L)	< 0.031	0.061	< 0.031
Organic carbon (mg/L)	NA ^c	0.8	NA
Calcium (mg/L)	16.5 (16–17.1)	47.8 (47–48.5)	18.8 (18.5–19)
Magnesium (mg/L)	0.82 (0.8–0.83)	17.95 (17.9–18)	2.17 (2.14–2.2)
Sodium (mg/L)	100.5 (97–110)	161 (160–162)	41.5 (41–42)
Chloride (mg/L)	14 (12.7–16)	79.8 (79–80.6)	8.21 (7.22–9.2)
Sulfate (mg/L)	110 (109–110)	194 (190–198)	30.6 (28.2–33)
Arsenic (mcg/L)	21.5 (8–22)	5	11
Fluoride (mg/L)	1.9 (1.79–2)	3.19 (2.98–3.4)	1.64 (1.59–1.7)
Uranium, natural (µg/L)	0.89	NA	0.3
Radon-222 (pCi/L)	30 (28–32)	31	31 (26–36)

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

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

^c NA = no data collected for this parameter.

Source: USGS (2012b).

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pumping scenario represents 15% of the annual groundwater inputs to the basin and 6% of the storage in the basin-fill aquifer over the 20-year analysis period. The medium pumping scenario represents 2% of the annual groundwater inputs to the basin and 1% of the storage in the basin fill aquifer over the 20-year analysis period. The low pumping scenario is negligible in comparison to the groundwater budget components in the Amargosa Desert Basin.

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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

TABLE 11.1.9.1-7 Groundwater Surface Elevations Relevant to the Proposed Amargosa Valley SEZ as Revised

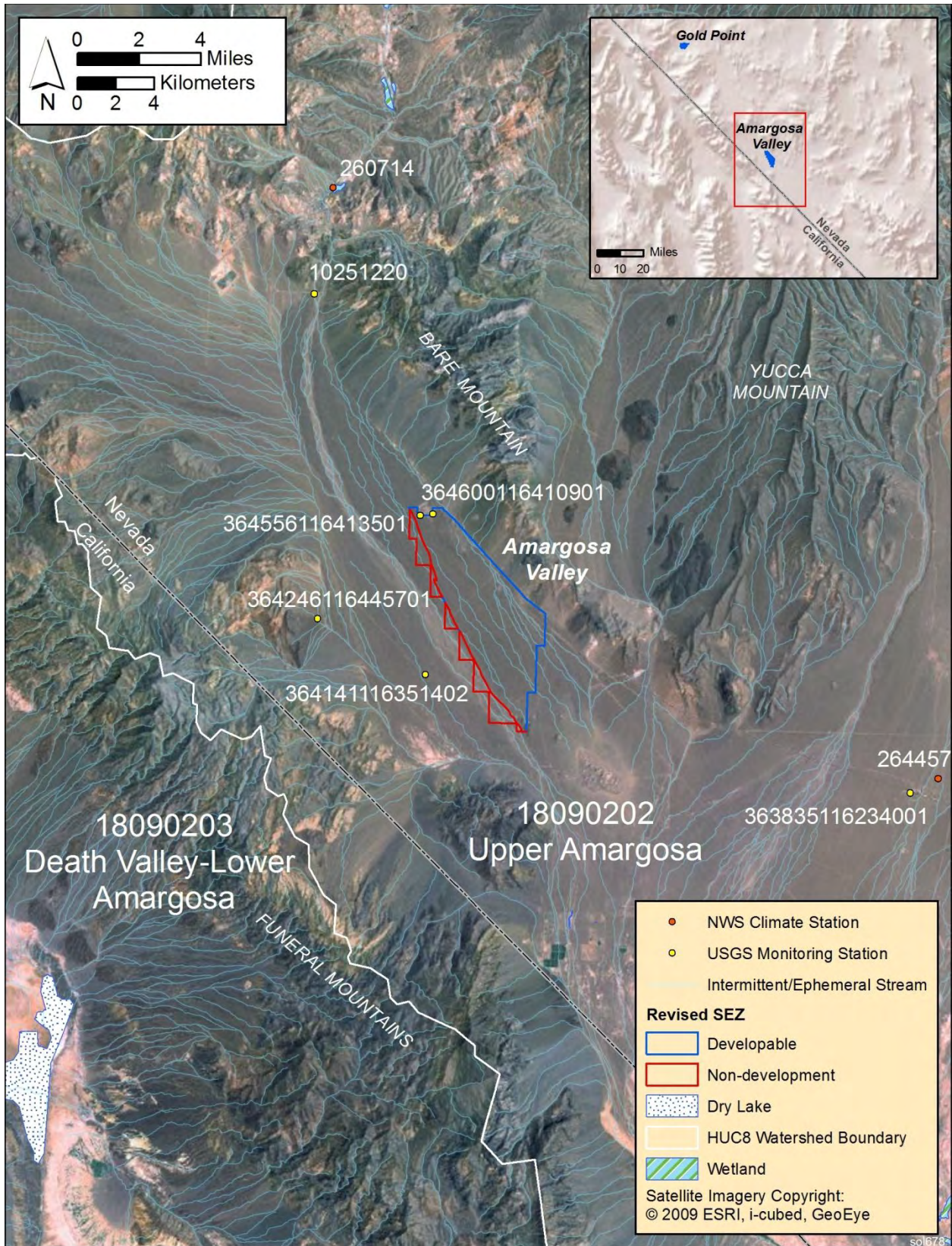
	Station (USGS ID)						
	362425116181001	362532116172700 (Devils Hole)	363310116294001	363317116270801	364141116351402	364246116445701	364600116410901
Period of record	1969–2011	1937–2009	1953–2011	1995–2011	1986–2011	1986–2011	1988–2006
No. of observations	90	690	292	59	215	86	62
Surface elevation (ft) ^a	2,248	2,360	2,376	2,396	2,628	2,730	2,772
Well depth (ft)	280	NA ^c	348	1,859	320	1,400	324
Depth to water, median (ft)	19.96	2.15	128.54	123.84	269.77	281.9	301
Depth to water, range (ft)	18–29.8	0.95–3.8	103–144.59	119.04–128.55	269.36–270.45	280.4–282.2	300–307
Depth to water, most recent observation (ft)	20.25	2.03	144.59	128.55	270.45	282.03	302
Distance to SEZ (mi) ^b	29	29	14	16	3	5	4

^a To convert ft to m, multiply by 0.3048.

^b To convert mi to km, multiply by 1.6093.

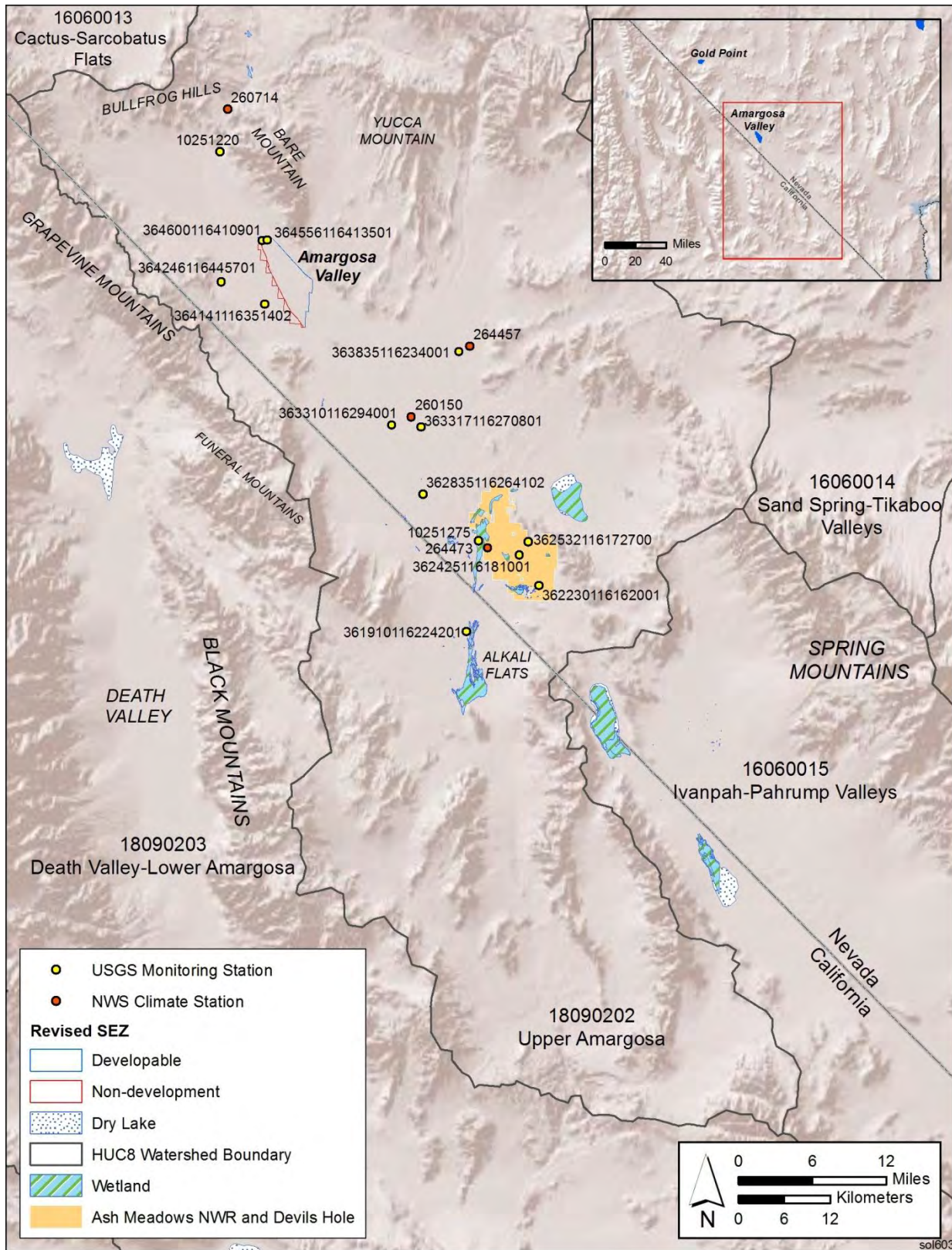
^c NA = data not available for this parameter.

Source: USGS (2012b).



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2 **FIGURE 11.1.9.1-1 Water Features near the Proposed Amargosa Valley SEZ as Revised**



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2 **FIGURE 11.1.9.1-2 Water Features within the Upper Amargosa Watershed, Which Includes the**

3 **Proposed Amargosa Valley SEZ as Revised**

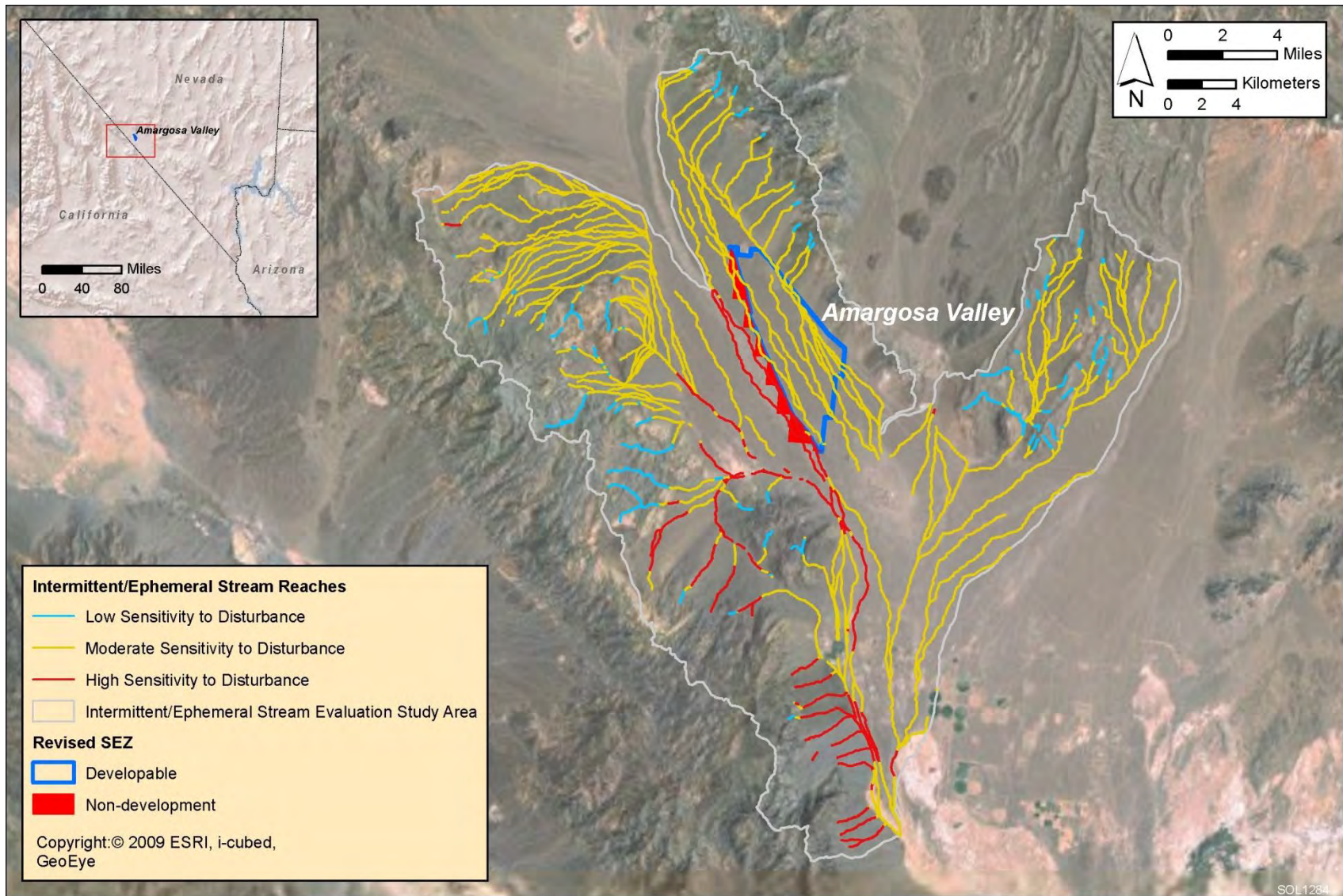


FIGURE 11.1.9.2-1 Intermittent/Ephemeral Stream Channel Sensitivity to Surface Disturbances in the Vicinity of the Proposed Amargosa Valley SEZ as Revised

1 **TABLE 11.1.9.2-1 Estimated Water Requirements for the Proposed Amargosa Valley SEZ**
 2 **as Revised^a**

Activity	Parabolic Trough	Power Tower	Dish Engine	PV
Construction—Peak Year				
<i>Water use requirements</i>				
Fugitive dust control (ac-ft) ^b	1,056	1,584	1,584	1,584
Potable supply for workforce (ac-ft)	74	45	19	9
Total water use requirements (ac-ft)	1,130	1,629	1,603	1,593
<i>Wastewater generated</i>				
Sanitary wastewater (ac-ft)	74	45	19	9
Operations				
<i>Water use requirements</i>				
Mirror/panel washing (ac-ft/yr)	678	377	377	38
Potable supply for workforce (ac-ft/yr)	19	8	8	1
Dry cooling (ac-ft/yr)	271–1,357	151–754	NA	NA
Wet cooling (ac-ft/yr)	6,105–19,671	3,392–10,928	NA	NA
<i>Total water use requirements</i>				
Non-cooled technologies (ac-ft/yr)	NA ^c	NA	385	39
Dry-cooled technologies (ac-ft/yr)	968–2,054	536–1,139	NA	NA
Wet-cooled technologies (ac-ft/yr)	6,802–20,368	3,777–11,313	NA	NA
<i>Wastewater generated</i>				
Blowdown (ac-ft/yr)	385	214	NA	NA
Sanitary wastewater (ac-ft/yr)	19	8	8	1

^a See Section M.9.2 of Appendix M of the Draft Solar PEIS for methods used in estimating water use requirements.

^b To convert ac-ft to m³, multiply by 1,234.

^c NA = not applicable.

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 5 groundwater model (Table 11.1.9.2-3) represent available literature data and that the model
 6 aggregates these value ranges into a simplistic representation of the aquifer.

7
 8 Depth to groundwater is on the order of 300 ft (91 m) below the surface in the vicinity
 9 of the SEZ. The one-dimensional groundwater modeling results suggest that groundwater
 10 withdrawals for solar energy development would result in groundwater drawdown in the vicinity
 11 of the SEZ (approximately a 2-mi [3.2-km] radius) that ranges up to 23 ft (7 m) for the high
 12 pumping scenario, up to 4 ft (1.2 m) for the medium pumping scenario, and less than 1 ft (0.3 m)
 13 for the low pumping scenario (Figure 11.1.9.2-2). The majority of the groundwater drawdown
 14 occurs within the vicinity of the SEZ with the exception of the high pumping scenario, for which
 15 estimates are 4 ft (1.2 m) of drawdown occurring at about 10 mi (16 km) away from the SEZ.

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TABLE 11.1.9.2-2 Groundwater Budget for the Amargosa Desert Groundwater Basin, Which Includes the Proposed Amargosa Valley SEZ as Revised

Process	Amount ^a
<i>Inputs</i>	
Amargosa River seepage (ac-ft/yr)	90 ^b
Precipitation recharge (ac-ft/yr)	600–1,200
Underflow from surrounding valleys (ac-ft/yr)	19,000–44,000
<i>Outputs</i>	
Evapotranspiration (ac-ft/yr)	17,000–24,000
Underflow to Death Valley (ac-ft/yr)	19,000 ^c
Groundwater withdrawals in 2010 (ac-ft/yr)	15,393 ^d
<i>Storage</i>	
Storage – basin fill aquifer (ac-ft)	2,300,000
Storage – carbonate rock aquifer (ac-ft)	3,600,000
Perennial yield (ac-ft/yr)	24,000 ^e

- a To convert ac-ft to m³, multiply by 1,234.
- b Stonestrom et al. (2007).
- c Ruling 5750 (NDWR 2007).
- d NDWR pumping inventory for 2010 (NDWR 2010).
- e Defined by NDWR (2012).

Source: Burbey (1997).

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11.1.9.2.3 Off-Site Impacts: Roads and Transmission Lines

As stated in the Draft Solar PEIS, impacts associated with the construction of roads and transmission lines primarily deal with water use demands for construction, water quality concerns relating to potential chemical spills, and land disturbance effects on the natural hydrology. Water needed for transmission line construction activities (e.g., for soil compaction, dust suppression, and potable supply for workers) could be trucked to the construction area from an off-site source. If this occurred, water use impacts at the SEZ would be negligible. The Draft Solar PEIS assessment of impacts on water resources from road and transmission line construction remains valid.

11.1.9.2.4 Summary of Impacts on Water Resources

The additional information and analyses of water resources presented in this update agree with information provided in the Draft Solar PEIS. The Amargosa Valley SEZ is located in an

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TABLE 11.1.9.2-3 Aquifer Characteristics and Assumptions Used in the One-Dimensional Groundwater Model for the Proposed Amargosa Valley SEZ as Revised

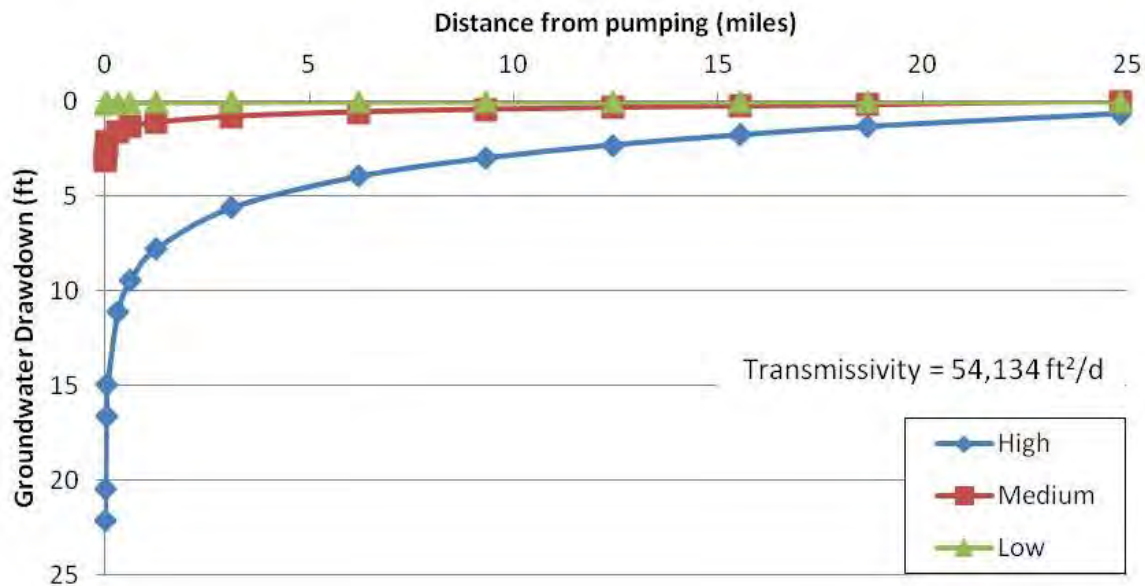
Parameter	Value ^a
Aquifer type/conditions	Basin fill/unconfined
Aquifer thickness (ft)	1,400–5,000 (1,500)
Hydraulic conductivity (ft/day)	0.003–427 (36)
Transmissivity (ft ² /day)	0.02–64,600 (54,134)
Storage coefficient	0.0004–0.2 (0.03)
Analysis period (yr)	20
High pumping scenario (ac-ft/yr) ^b	6,802
Medium pumping scenario (ac-ft/yr)	969
Low pumping scenario (ac-ft/yr)	39

^a Values used for modeling in parentheses.

^b To convert ac-ft to m³, multiply by 1,234.

Sources: Belcher et al. (2001); Sweetkind et al. (2001).

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FIGURE 11.1.9.2-2 Estimated One-Dimensional Groundwater Drawdown Resulting from High, Medium, and Low Groundwater Pumping Scenarios over the 20-Year Operational Period at the Proposed Amargosa Valley SEZ as Revised

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1 arid desert valley where water resources are primarily groundwater in the basin-fill and regional-
2 scale carbonate rock aquifer, and surface water features are primarily the intermittent Amargosa
3 River and several intermittent/ephemeral streams. Water resources are strictly managed resulting
4 from a U.S. Supreme Court decision in 1976 and subsequently by several management actions
5 by the NDWR in order to protect water resources that support Devils Hole, Ash Meadows NWR,
6 and the Wild and Scenic River reach of the Amargosa River in California (see Section 11.1.9.1.3
7 in the Draft Solar PEIS).

8
9 The intermittent/ephemeral stream evaluation identified several reaches with a moderate
10 sensitivity to disturbance within the SEZ. Disturbances to intermittent/ephemeral stream
11 reaches associated with the stream channels of the Amargosa River could potentially affect the
12 groundwater recharge, flood and sediment conveyance, and ecological habitat value of these
13 reaches (Figure O.1-4 in Appendix O). The reduction of the SEZ boundaries and identification
14 of non-development areas have removed the Amargosa River and its floodplain from the SEZ,
15 thereby reducing potential impacts associated with flooding, debris flows, and groundwater
16 recharge.

17
18 Groundwater withdrawals associated with the various groundwater pumping scenarios
19 suggest that the majority of groundwater drawdown will be less than 25 ft (8 m) and localized
20 near the SEZ. The high pumping scenario has the potential for groundwater drawdown impacts
21 more than 10 mi (16 km) away from the SEZ, which potentially affects the Amargosa Farms
22 area of the basin, which has experienced historical groundwater drawdown from agricultural
23 irrigation withdrawals (see Section 11.1.9.1.2 in the Draft Solar PEIS).

24
25 Ultimately, water rights and management administered by the NDWR will determine
26 acceptable groundwater withdrawals that can be used to support solar energy development.
27 Given the overallocated condition of the basin, the connectivity of the basin-fill and carbonate
28 rock aquifers, and the sensitivity of groundwater dependency of Devils Hole and Ash Meadows
29 NWR, the NDWR currently limits the transfer of water rights to those that can move
30 groundwater wells farther away from Devils Hole and help alleviate the overallocated conditions
31 of the basin. It is very likely that solar energy developers will have to secure water right
32 allocations that include the retirement of some existing water rights (NDWR 2007, 2008, 2012).

33
34 Predicting impacts associated with groundwater withdrawals is often difficult given the
35 heterogeneity of aquifer characteristics, the long time period between the onset of pumping and
36 its effects, and limited data. One of the primary mitigation measures for protecting water
37 resources is the implementation of long-term monitoring and adaptive management. For
38 groundwater, this requires the combination of monitoring and modeling to fully identify the
39 temporal and spatial extent of potential impacts. The BLM is currently working on developing
40 a groundwater modeling framework, which would more accurately predict potential impacts
41 on groundwater and help support long-term monitoring activities. Initial efforts are focused on
42 modifying the Death Valley Regional Flow System Model (<http://regmod.wr.usgs.gov/>) for
43 use at the Amargosa Valley SEZ. This modeling framework can also be used to interpret
44 groundwater monitoring data and guide adaptive management plans. When the detailed modeling
45 is completed, it will be made available at the project Web site (<http://solareis.anl.gov>) for use by
46 applicants, the BLM, and other stakeholders.

1 **11.1.9.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on surface water
4 and groundwater are described in Section A.2.2 of Appendix A of this Final Solar PEIS.
5 Implementing the programmatic design features will provide some protection of and reduce
6 impacts on water resources.
7

8 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
9 analyses due to changes to the SEZ boundaries, and consideration of comments received as
10 applicable, the following SEZ-specific design feature has been identified:
11

- 12 • Groundwater analyses suggest that full build-out of wet-cooled technologies is
13 not feasible; for mixed-technology development scenarios, any proposed wet-
14 and dry-cooled projects should utilize water conservation practices.
15

16 The need for additional SEZ-specific design features will be identified through the
17 process of preparing parcels for competitive offer and subsequent project-specific analysis.
18
19

20 **11.1.10 Vegetation**
21

22 **11.1.10.1 Affected Environment**
23

24 Revisions to the boundaries of the Amargosa Valley SEZ have eliminated the
25 Amargosa River and most of the associated floodplain. In addition, the remaining
26 Amargosa River floodplain within the SEZ, consisting of 1,258 acres (5.1 km²), was
27 identified as a non-development area.
28
29

30 As presented in Section 11.1.10.1 of the Draft Solar PEIS, 4 cover types were identified
31 within the area of the proposed Amargosa Valley SEZ, while 18 cover types were identified in
32 the area of indirect effects. Sensitive habitats on the SEZ include desert dry washes, desert
33 chenopod scrub/mixed salt desertscrub, and playas. Because of the changes to the SEZ
34 boundaries, the Sonora-Mojave Mixed Salt Desert Scrub and North American Warm Desert
35 Wash cover types no longer occur within the SEZ, and the North American Arid West Emergent
36 Marsh, North American Warm Desert Pavement, North American Warm Desert Riparian
37 Woodland and Shrubland, Inter-Mountain Basins Shale Badland, and Inter-Mountain Basins
38 Greasewood Flat cover types no longer occur within 5 mi (8 km) of the SEZ boundary.
39 Figure 11.1.10.1-1 shows the cover types within the affected area of the Amargosa Valley SEZ
40 as revised.
41
42

43 **11.1.10.2 Impacts**
44

45 As presented in the Draft Solar PEIS, the construction of solar energy facilities within the
46 proposed Amargosa Valley SEZ would result in direct impacts on plant communities because of

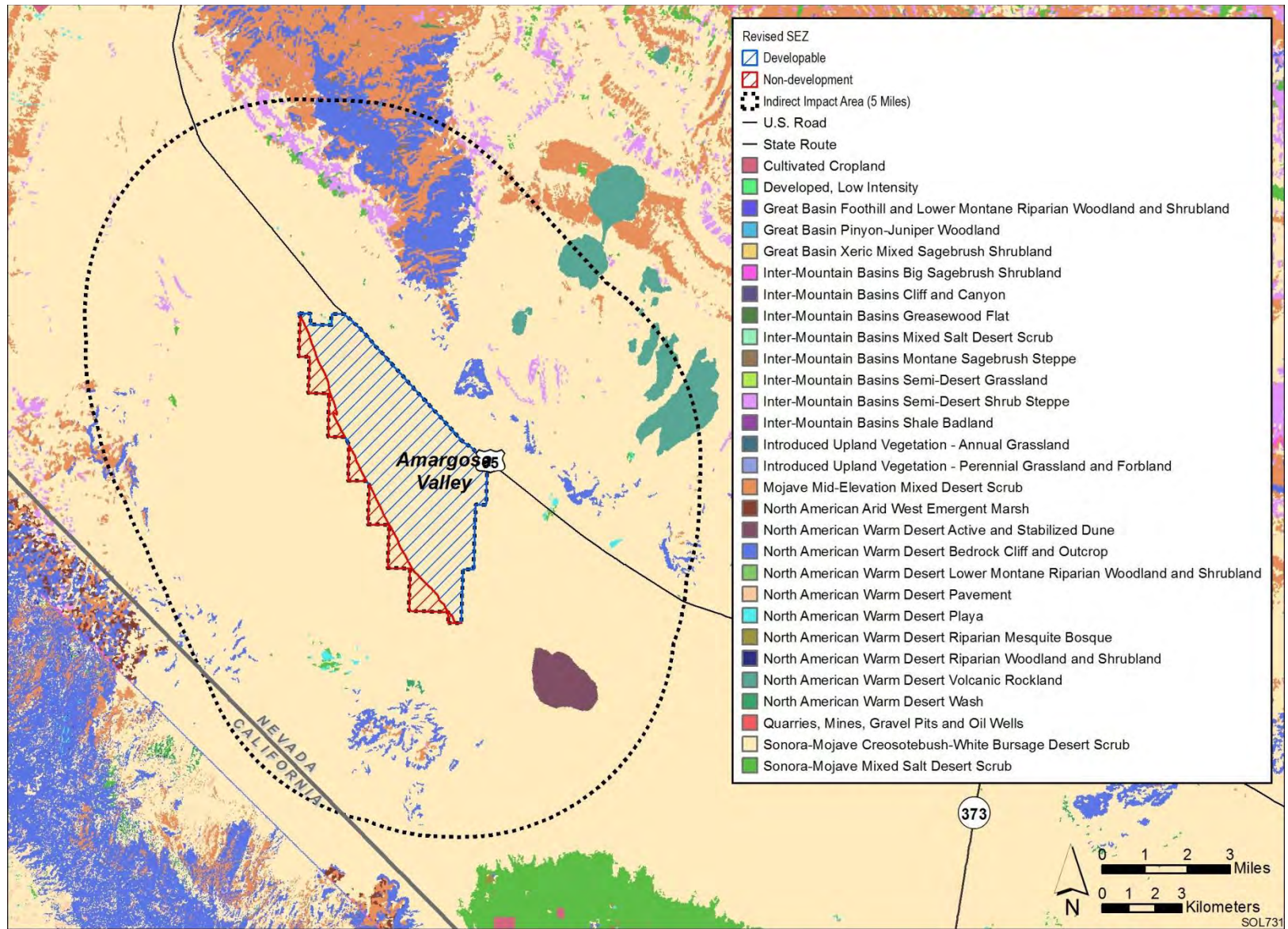


FIGURE 11.1.10.1-1 Land Cover Types within the Proposed Amargosa Valley SEZ as Revised

1 the removal of vegetation within the facility footprint during land-clearing and land-grading
2 operations. Approximately 80% of the SEZ would be expected to be cleared with full
3 development of the SEZ. As a result of the new configuration of the SEZ boundaries,
4 approximately 6,783 acres (27 km²) would be cleared.
5

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

11 ***11.1.10.2.1 Impacts on Native Species***

12
13
14 The analysis presented in the Draft Solar PEIS for the Amargosa Valley SEZ indicated
15 that development would result in a moderate impact on one land cover type and a small impact
16 on all other land cover types occurring within the SEZ (Table 11.1.10.1-1 in the Draft Solar
17 PEIS). Development within the revised Amargosa Valley SEZ could still directly affect some of
18 the cover types evaluated in the Draft Solar PEIS, with the exception of Sonora-Mojave Mixed
19 Salt Desert Scrub and North American Warm Desert Wash; the reduction in the developable
20 area would result in reduced impact levels on all cover types in the affected area. The impact
21 magnitude for Sonora-Mojave Creosotebush-White Bursage Desert Scrub (previously moderate)
22 would be reduced to small, but the impact magnitudes for all other cover types would remain
23 unchanged compared to original estimates in the Draft Solar PEIS. Because of the change in
24 the area of indirect effects, the North American Arid West Emergent Marsh, North American
25 Warm Desert Pavement, North American Warm Desert Riparian Woodland and Shrubland,
26 Inter-Mountain Basins Shale Badland, and Inter-Mountain Basins Greasewood Flat cover types
27 would not be indirectly affected.
28

29 Indirect impacts on wetlands, playas, or other intermittently flooded areas downgradient
30 from the SEZ, as described in the Draft Solar PEIS, could still occur. Potential indirect impacts
31 from groundwater use on communities in the region that depend on groundwater, such as
32 mesquite bosque or wetlands at Ash Meadows or those associated with the Amargosa River,
33 could also still occur.
34

35 ***11.1.10.2.2 Impacts from Noxious Weeds and Invasive Plant Species***

36
37
38 As presented in the Draft Solar PEIS, land disturbance from project activities and indirect
39 effects of construction and operation within the Amargosa Valley SEZ could potentially result in
40 the establishment or expansion of noxious weeds and invasive species populations, potentially
41 including those species listed in Section 11.1.10.1 of the Draft Solar PEIS. Impacts such as
42 reduced restoration success and possible widespread habitat degradation could still occur;
43 however, a small reduction in the potential for such impacts would result from the reduced
44 developable area of the SEZ.
45

11.1.10.3 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:

- All playa and desert dry wash habitats 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 playas and dry washes to reduce the potential for impacts on these habitats on or near the SEZ.
- Appropriate engineering controls shall be used to minimize impacts on the Amargosa River and on dry wash, playa, riparian, and wetland habitats, including downstream occurrences, resulting from surface water runoff, erosion, sedimentation, altered hydrology, accidental spills, or fugitive dust deposition to these habitats. Appropriate buffers and engineering controls will be determined through agency consultation. Appropriate measures to minimize impacts on Big Dunes habitats should be determined through agency consultation.
- Groundwater withdrawals shall be limited to reduce the potential for indirect impacts on groundwater-dependent habitats in the Amargosa Desert groundwater basin or in other hydraulically connected basins, such as springs at Ash Meadows and Death Valley NP, other locations of groundwater discharge, such as the Amargosa River, or other groundwater-dependent habitats in the vicinity of the SEZ, such as mesquite bosque communities.

It is anticipated that implementation of these programmatic design features will reduce a high potential for impacts from invasive species and potential impacts on dry washes, playas, chenopod scrub, mesquite bosque, springs, riparian habitats, wetlands, and dune habitats to a minimal potential for impact. Residual impacts on wetlands could result from remaining groundwater withdrawal and so forth; 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 for vegetation have been identified. Some SEZ-specific design features may be identified through the process of preparing parcels for competitive offer and subsequent project-specific analysis.

11.1.11 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

1 small proportion ($\leq 1\%$) of the species' habitat within the SEZ region would be lost;
2 (2) *moderate*: an intermediate proportion (> 1 but $\leq 10\%$) of the species' habitat would be lost;
3 and (3) *large*: $> 10\%$ of the species' habitat would be lost.
4
5

6 **11.1.11.1 Amphibians and Reptiles**

7
8

9 **11.1.11.1.1 Affected Environment**

10

11 As presented in Section 11.1.11.1 of the Draft Solar PEIS, representative amphibian and
12 reptile species expected to occur within the Amargosa Valley SEZ include the red-spotted toad
13 (*Bufo punctatus*), desert horned lizard (*Phrynosoma platyrhinos*), Great Basin collared lizard
14 (*Crotaphytus bicinctores*), long-nosed leopard lizard (*Gambelia wislizenii*), side-blotched
15 lizard (*Uta stansburiana*), western fence lizard (*Sceloporus occidentalis*), western whiptail
16 (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), coachwhip (*Masticophis*
17 *flagellum*), glossy snake (*Arizona elegans*), gophersnake (*Pituophis catenifer*), groundsnake
18 (*Sonora semiannulata*), nightsnake (*Hypsiglena torquata*), and sidewinder (*Crotalus cerastes*).
19 The reduction in the size of the Amargosa Valley SEZ does not alter the potential for these
20 species to occur in the affected area.
21
22

23 **11.1.11.1.2 Impacts**

24

25 As presented in the Draft Solar PEIS, solar energy development within the Amargosa
26 Valley SEZ could affect potentially suitable habitats for the representative amphibian and reptile
27 species. The analysis presented in the Draft Solar PEIS for the Amargosa Valley SEZ indicated
28 that development would result in a small overall impact on most representative amphibian and
29 reptile species and a moderate impact on the glossy snake and sidewinder (Table 11.1.11.1-1 in
30 the Draft Solar PEIS). The reduction in the developable area of the Amargosa Valley SEZ would
31 result in reduced habitat impacts for all representative amphibian and reptile species; the
32 resultant impact levels for all the representative species would be small.
33
34

35 **11.1.11.1.3 SEZ-Specific Design Features and Design Feature Effectiveness**

36

37 Required programmatic design features are described in Section A.2.2 of Appendix A
38 of this Final Solar PEIS. With the implementation of required programmatic design features,
39 impacts on amphibian and reptile species will be reduced.
40

41 Because of the change in boundaries of the SEZ, the SEZ-specific design feature
42 identified in Section 11.1.11.2.3 of the Draft Solar PEIS (i.e., the Amargosa River should be
43 avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar
44 PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of
45 comments received as applicable, no SEZ-specific design features for amphibian and reptile

1 species have been identified. Some SEZ-specific design features may be identified through the
2 process of preparing parcels for competitive offer and subsequent project-specific analysis.
3
4

5 **11.1.11.2 Birds**

6 7 8 **11.1.11.2.1 Affected Environment** 9

10 As presented in Section 11.1.11.2.1 of the Draft Solar PEIS, a large number of bird
11 species could occur or have potentially suitable habitat within the affected area of the proposed
12 Amargosa Valley SEZ. Representative bird species identified in the Draft Solar PEIS included
13 (1) shorebirds: killdeer (*Charadrius vociferus*); (2) passerines: ash-throated flycatcher
14 (*Myiarchus cinerascens*), Bewick's wren (*Thryomanes bewickii*), black-tailed gnatcatcher
15 (*Poliophtila melanura*), black-throated sparrow (*Amphispiza bilineata*), common poorwill
16 (*Phalaenoptilus nuttallii*), common raven (*Corvus corax*), Costa's hummingbird (*Calypte*
17 *costae*), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*),
18 ladder-backed woodpecker (*Picoides scalaris*), Le Conte's thrasher (*Toxostoma lecontei*),
19 lesser nighthawk (*Chordeiles acutipennis*), loggerhead shrike (*Lanius ludovicianus*), northern
20 mockingbird (*Mimus polyglottos*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza*
21 *belli*), Say's phoebe (*Sayornis saya*), verdin (*Auriparus flaviceps*), and western kingbird
22 (*Tyrannus verticalis*); (3) raptors: American kestrel (*Falco sparverius*), golden eagle (*Aquila*
23 *chrysaetos*), great horned owl (*Bubo virginianus*), long-eared owl (*Asio otus*), red-tailed hawk
24 (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*); and (4) upland gamebirds: chukar
25 (*Alectoris chukar*), Gambel's quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*),
26 and white-winged dove (*Zenaida asiatica*). The reduction in the size of the Amargosa Valley
27 SEZ does not alter the potential for these species or other bird species to occur in the affected
28 area.
29
30

31 **11.1.11.2.2 Impacts** 32

33 As presented in the Draft Solar PEIS, solar energy development within the Amargosa
34 Valley SEZ could affect potentially suitable bird habitats. The analysis presented in the Draft
35 Solar PES for the Amargosa Valley SEZ indicated that development would result in a small
36 overall impact on most representative bird species and a moderate impact on the black-tailed
37 gnatcatcher (Table 11.1.11.2-1 in the Draft Solar PEIS). The reduction in the developable area of
38 the Amargosa Valley SEZ would result in reduced habitat impacts for all representative bird
39 species; the resultant impact levels for all the representative bird species would be small.
40
41

42 **11.1.11.2.3 SEZ-Specific Design Features and Design Feature Effectiveness** 43

44 Required programmatic design features that would reduce impacts on bird species are
45 described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of

1 required programmatic design features and the applicable SEZ-specific design features, impacts
2 on bird species are anticipated to be small.

3
4 Because of the change in boundaries of the SEZ, one of the SEZ-specific design features
5 identified in Section 11.1.11.2.3 of the Draft Solar PEIS (i.e., the Amargosa River should be
6 avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar
7 PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of
8 comments received as applicable, no SEZ-specific design features for bird species have been
9 identified. Some SEZ-specific design features may be identified through the process of preparing
10 parcels for competitive offer and subsequent project-specific analysis.

11 12 13 **11.1.11.3 Mammals**

14 15 16 ***11.1.11.3.1 Affected Environment***

17
18 As presented in Section 11.1.11.3.1 of the Draft Solar PEIS, a large number of mammal
19 species were identified that could occur or have potentially suitable habitat within the affected
20 area of the proposed Amargosa Valley SEZ. Representative mammal species identified in the
21 Draft Solar PEIS included (1) big game species: cougar (*Puma concolor*), elk (*Cervus*
22 *canadensis*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*);
23 (2) furbearers and small game species: the American badger (*Taxidea taxus*), black-tailed
24 jackrabbit (*Lepus californicus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*, common), desert
25 cottontail (*Sylvilagus audubonii*), gray fox (*Urocyon cinereoargenteus*), kit fox (*Vulpes*
26 *macrotis*), and red fox (*Vulpes vulpes*); and (3) small nongame species: Botta's pocket gopher
27 (*Thomomys bottae*), cactus mouse (*Peromyscus eremicus*), canyon mouse (*P. crinitis*), deer
28 mouse (*P. maniculatus*), desert kangaroo rat (*Dipodomys deserti*), desert shrew (*Notiosorex*
29 *crawfordi*), desert woodrat (*Neotoma lepida*), little pocket mouse (*Perognathus longimembris*),
30 long-tailed pocket mouse (*Chaetodipus formosus*), Merriam's pocket mouse (*Dipodomys*
31 *merriami*), northern grasshopper mouse (*Onychomys leucogaster*), southern grasshopper mouse
32 (*O. torridus*), western harvest mouse (*Reithrodontomys megalotis*), and white-tailed antelope
33 squirrel (*Ammospermophilus leucurus*). Bat species that may occur within the area of the SEZ
34 include the big brown bat (*Eptesicus fuscus*), Brazilian free-tailed bat (*Tadarida brasiliensis*),
35 California myotis (*Myotis californicus*), hoary bat (*Lasiurus cinereus*), little brown myotis (*M.*
36 *lucifugus*), long-legged myotis (*M. volans*), silver-haired bat (*Lasionycteris noctivagans*), and
37 western pipistrelle (*Parastrellus hesperus*). The reduction in the size of the Amargosa Valley
38 SEZ does not alter the potential for these species or any additional mammal species to occur in
39 the affected area.

40 41 42 ***11.1.11.3.2 Impacts***

43
44 As presented in the Draft Solar PEIS, solar energy development within the Amargosa
45 Valley SEZ could affect potentially suitable habitats of mammal species. The analysis presented
46 in the Draft Solar PEIS for the Amargosa Valley SEZ indicated that development would result in

1 a small overall impact on most representative mammal species analyzed and a moderate impact
2 on the Botta's pocket gopher and the western harvest mouse (Table 11.1.11.3-1 in the Draft Solar
3 PEIS). The reduction in the developable area of the Amargosa Valley SEZ would result in
4 reduced habitat impacts for all representative mammal species; resultant impact levels for all the
5 representative mammal species would be small. On the basis of mapped activity areas, direct
6 potential loss of overall range for the cougar would be reduced from 25,300 acres (102 km²) to
7 6,783 acres (27.4 km²). No mapped activity areas for elk, mule deer, or pronghorn occur within
8 the original configuration or reconfiguration of the SEZ. Direct impact levels for big game
9 activity areas would still be small to none.

11.1.11.3.3 *SEZ-Specific Design Features and Design Feature Effectiveness*

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

18 Because of the change in boundaries of the SEZ, one of the SEZ-specific design features
19 identified in Section 11.1.11.3.3 of the Draft Solar PEIS (i.e., the Amargosa River should be
20 avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar
21 PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of
22 comments received as applicable, no SEZ-specific design features have been identified through
23 this Final Solar PEIS. Some SEZ-specific design features may be identified through the process
24 of preparing parcels for competitive offer and subsequent project-specific analysis.

11.1.11.4 *Aquatic Biota*

11.1.11.4.1 *Affected Environment*

32 There are no surface water bodies, wetlands, or perennial streams within the proposed
33 Amargosa Valley SEZ. The boundaries of the Amargosa Valley SEZ have been reduced
34 compared to the boundaries given in the Draft Solar PEIS. On the basis of these changes,
35 updates to the Draft Solar PEIS include the following:

- 37 • The intermittent/ephemeral Amargosa River has been identified as a
38 non-development area.
- 39 • There are no surface water bodies, wetlands, or perennial streams located
40 within the area of indirect effects within 5 mi (8 km) of the SEZ. However,
41 13 mi (21 km) of the Amargosa River and 15 mi (24 km) of an unnamed
42 intermittent stream that drains into the Amargosa River are present in the area
43 of indirect effects.
44
45

- Outside of the potential indirect effects area but within 50 mi (80 km) of the SEZ, there are 534 mi (859 km) of intermittent stream located within 50 mi (80 km) of the SEZ and 16 mi (26 km) of an unnamed perennial stream.
- The proposed new road corridor has been moved and is more than 10 mi (16 km) from the perennial White River.

There is no information on aquatic biota in the surface water features in the SEZ. 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 aquatic biota, if present.

11.1.11.4.2 Impacts

The types of impacts from the development of utility-scale solar energy facilities that could affect aquatic habitats and biota are discussed in Section 5.10.3 of the Draft Solar PEIS and this 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 update:

- The intermittent/ephemeral Amargosa River has been identified as a non-development area; therefore, streams and wetlands would not be directly affected by construction activities. However, as described in the Draft Solar PEIS, streams and wetlands could be affected indirectly by solar development activities within the SEZ.

11.1.11.4.3 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 determine how programmatic design features are applied, for example:

- Appropriate engineering controls shall be implemented to minimize the amount of sediment and contaminants entering the Amargosa River.
- Development shall avoid any additional wetlands identified during future site-specific fieldwork.
- If groundwater is used, the amount withdrawn shall not affect aquatic habitat in the Amargosa River ACEC and the Ash Meadows NWR.

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,

1 the potential impacts on aquatic biota from solar energy development at the Amargosa Valley
2 SEZ would be small.

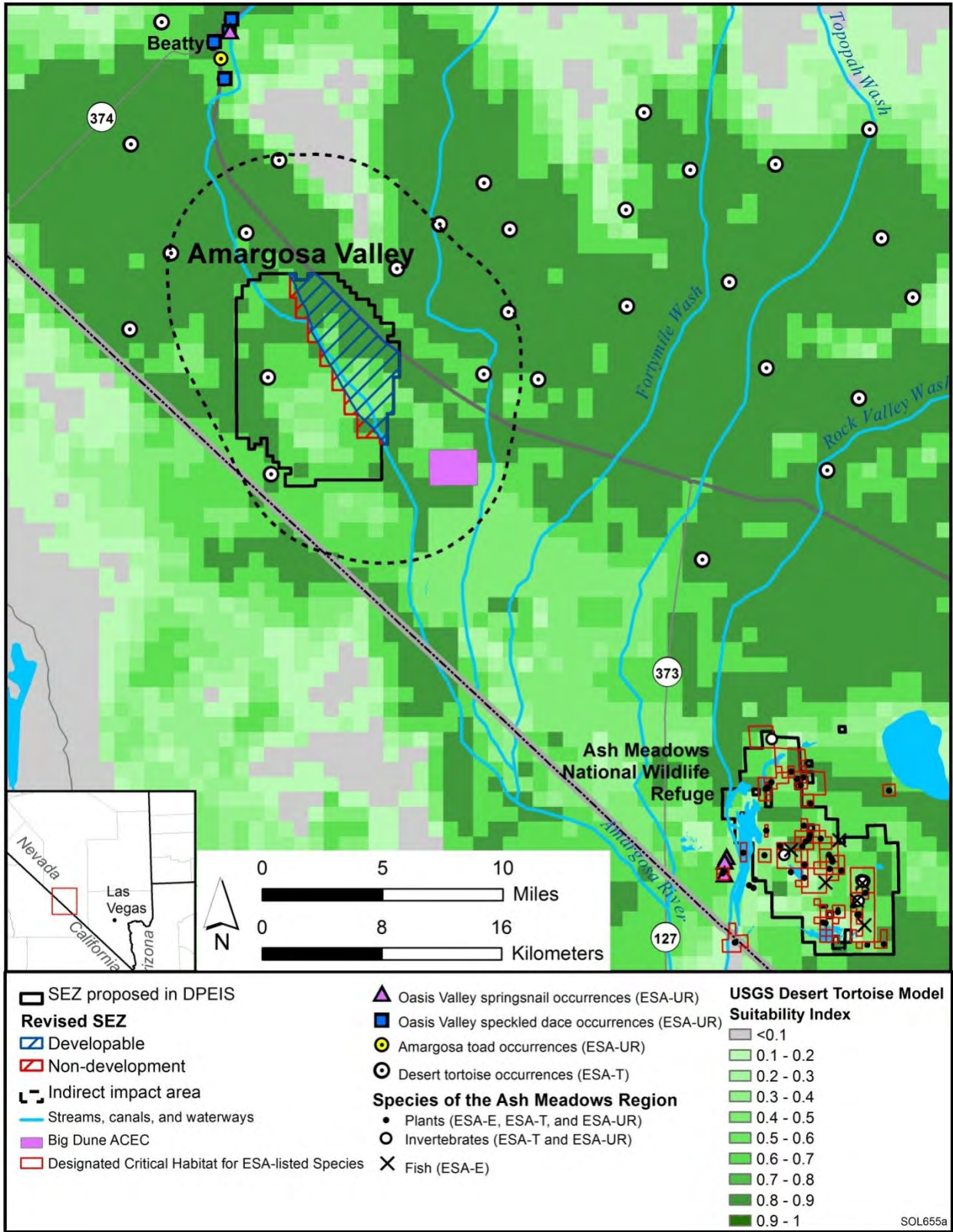
3
4 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
5 analyses due to changes to the SEZ boundaries, and consideration of comments received as
6 applicable, no SEZ-specific design features for aquatic biota have been identified. Some
7 SEZ-specific design features may be identified through the process of preparing parcels for
8 competitive offer and subsequent project-specific analysis.
9

10 11 **11.1.12 Special Status Species**

12 13 14 **11.1.12.1 Affected Environment**

15
16 As presented in the Draft Solar PEIS, 52 special status species were identified that could
17 occur or have potentially suitable habitat within the affected area of the proposed Amargosa
18 Valley SEZ. The reduction in the size of the Amargosa Valley SEZ does not alter the potential
19 for these species to occur in the affected area, but it may reduce the impact magnitude for
20 some species with moderate or large impacts as determined in the Draft Solar PEIS. A total of
21 seven special status species that were determined to have moderate or large impacts in the Draft
22 Solar PEIS are re-evaluated here. These species include (1) plants: Ash Meadows buckwheat
23 (*Eriogonum contiguum*), Death Valley beardtongue (*Penstemon fruticiformis ssp. amargosae*),
24 Panamint Mountains bedstraw (*Galium hilendiae ssp. carneum*), weasel phacelia (*Phacelia*
25 *mustelina*), and white-margined beardtongue (*Penstemon albomarginatus*); (2) reptiles: desert
26 tortoise (*Gopherus agassizii*); and (3) birds: prairie falcon (*Falco mexicanus*).
27

28 Since publication of the Draft Solar PEIS, 14 additional special status species have been
29 identified that could potentially occur in the affected area based on county-level occurrences and
30 the presence of potentially suitable habitat. These 14 special status species are all designated
31 sensitive species by the Nevada BLM office and include (1) birds: crissal thrasher (*Toxostoma*
32 *crissale*), golden eagle (*Aquila chrysaetos*), gray vireo (*Vireo vicinior*), Le Conte's thrasher
33 (*Toxostoma lecontei*), loggerhead shrike (*Lanius ludovicianus*), long-eared owl (*Asio otus*),
34 and Lucy's warbler (*Vermivora luciae*); and (2) mammals: big brown bat (*Eptesicus fuscus*),
35 Brazilian free-tailed bat (*Tadarida brasiliensis*), California myotis (*Myotis californicus*), hoary
36 bat (*Lasiurus cinereus*), long-legged myotis (*Myotis volans*), silver-haired bat (*Lasionycteris*
37 *noctivagans*), and western pipistrelle (*Pipistrellus Hesperus*). These additional species are
38 discussed below, along with a re-evaluation of those species determined to have moderate
39 or large impacts in the Draft Solar PEIS. Figure 11.1.12.1-1 shows the known or potential
40 occurrences of species in the affected area of the Amargosa Valley SEZ that are listed, proposed,
41 or candidates for listing under the ESA.
42



1

2 **FIGURE 11.1.12.1-1 Proposed Amargosa Valley SEZ as Revised and Distribution of Potentially**

3 **Suitable Habitat for Species Listed under the Endangered Species Act**

1 ***11.1.12.1.1 Species Listed under the Endangered Species Act That Could Occur***
2 ***in the Affected Area***
3

4 The desert tortoise is listed as threatened under the ESA and is known to occur
5 throughout the SEZ affected area. This species was evaluated in the Draft Solar PEIS. According
6 to the SWReGAP habitat suitability model, approximately 8,470 acres (34 km²) of potentially
7 suitable habitat for the desert tortoise intersects the area of direct effects in the Amargosa Valley
8 SEZ (Figure 11.1.12.1-1; Table 11.1.12.1-1). Approximately 91,900 acres (372 km²) of
9 potentially suitable habitat occurs outside the SEZ within the area of indirect effects. Designated
10 critical habitat does not occur in the affected area. Additional information provided by the
11 USFWS since the publication of the Draft Solar PEIS indicates that the revised Amargosa Valley
12 SEZ is situated in an area that provides habitat and genetic connectivity between areas with
13 greater habitat suitability (Figure 11.1.12.1-1) (Ashe 2012). The USFWS determined the desert
14 tortoise connectivity areas on the basis of the USGS model for desert tortoise predicted suitable
15 habitat (Nussear et al. 2009).
16
17

18 ***11.1.12.1.2 BLM-Designated Sensitive Species***
19

20 There are 18 BLM-designated sensitive species that are discussed in this Final Solar
21 PEIS. Of these species, three were analyzed for the Amargosa Valley SEZ in the Draft Solar
22 PEIS. These species were determined to have large or moderate impacts resulting from solar
23 energy development within the SEZ and are thus re-evaluated in this Final Solar PEIS. These
24 species include (1) plants: Death Valley beardtongue and white-margined beardtongue; and
25 (2) birds: prairie falcon. The remaining 15 species were not evaluated for the Amargosa Valley
26 SEZ in the Draft Solar PEIS and are discussed in this Final Solar PEIS because of their potential
27 to occur in the SEZ affected area. These species include (1) birds: crissal thrasher, golden eagle,
28 gray vireo, Le Conte's thrasher, loggerhead shrike, long-eared owl, and Lucy's warbler; and
29 (2) mammals: big brown bat, Brazilian free-tailed bat, California myotis, hoary bat, long-legged
30 myotis, silver-haired bat, and western pipistrelle.
31
32

33 **Death Valley Beardtongue**
34

35 The Death Valley beardtongue is a perennial shrub that is known only from the Death
36 Valley region of California and southern Nevada. This species was analyzed for the Amargosa
37 Valley SEZ in the Draft Solar PEIS. It inhabits Mojave desertscrub communities at elevations
38 between 2,800 and 4,600 ft (850 and 1,400 m). The nearest known occurrences are 13 mi
39 (21 km) east of the proposed Amargosa Valley SEZ. Potentially suitable habitat for the species
40 occurs on the SEZ and other portions of the affected area (Table 11.1.12.1-1).
41
42

43 **White-Margined Beardtongue**
44

45 The white-margined beardtongue is a perennial forb that occurs in the deserts of Arizona,
46 California, and Nevada. This species was analyzed for the Amargosa Valley SEZ in the Draft

TABLE 11.1.12.1-1 Habitats, Potential Impacts, and Potential Mitigation for Special Status Species That Could Be Affected by Solar Energy Development on the Proposed Amargosa Valley SEZ as Revised^a

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Plants						
Ash Meadows buckwheatⁱ	<i>Eriogonum contiguum</i>	NV-S1	Known from the Mojave Desert of Inyo County, California, and Clark and Nye Counties, Nevada. Occurs on sandy to gravelly flats and slopes in association with creosote scrub and mesquite communities at elevations below 3,280 ft. ^j Occurs in the area of indirect effects. Nearest recorded occurrence is from the Funeral Mountains, approximately 4 mi ^k southwest of the SEZ. About 1,771,500 ^l acres of potentially suitable habitat occurs within the SEZ region.	6,780 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	95,000 acres of potentially suitable habitat (5.4% of available potentially suitable habitat)	Small overall impact. Pre-disturbance surveys, avoidance or minimization of disturbance to occupied habitats in the areas of direct effects, translocation of individuals from areas of direct effects, or compensatory mitigation of direct effects on occupied habitats could reduce impacts.
Death Valley beardtongue	<i>Penstemon fruticiformis</i> ssp. <i>amargosae</i>	BLM-S; FWS-SC; NV-S2	Known only from the Death Valley region of California and southern Nevada. It inhabits Mojave desertscrub communities at elevations between 2,800 and 4,600 ft. Nearest recorded occurrence is approximately 13 mi east of the SEZ. About 2,424,000 acres of potentially suitable habitat occurs within the SEZ region.	6,780 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	95,000 acres of potentially suitable habitat (3.9% of available potentially suitable habitat)	Small overall impact. See Ash Meadows buckwheat for a list of other potential mitigation measures.

1
2

3

TABLE 11.1.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^e and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Plants (Cont.)						
Panamint Mountains bedstraw	<i>Galium hilendiae</i> ssp. <i>carneum</i>	NV-S1	Endemic to the Mojave Desert region of Inyo County, California, and Nye County, Nevada. Inhabits creosote scrub and pinyon-juniper woodland communities. Nearest recorded occurrence is from the Death Valley NP, approximately 22 mi northwest of the SEZ. About 1,742,100 acres of potentially suitable habitat occurs within the SEZ region.	6,780 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	92,150 acres of potentially suitable habitat (5.3% of available potentially suitable habitat)	Small overall impact. See Ash Meadows buckwheat for a list of other potential mitigation measures.
Weasel phacelia	<i>Phacelia mustelina</i>	NV-S2	Mojave desertscrub, pinyon-juniper woodlands on volcanic or gravelly substrates at elevations between 5,000 and 5,500 ft. Nearest recorded occurrence is from the Death Valley NP, approximately 18 mi northwest of the SEZ. About 2,766,600 acres of potentially suitable habitat occurs within the SEZ region.	6,780 acres of potentially suitable habitat lost (0.2% of available potentially suitable habitat)	96,850 acres of potentially suitable habitat (3.5% of available potentially suitable habitat)	Small overall impact. See Ash Meadows buckwheat for a list of other potential mitigation measures.
White-margined beardtongue	<i>Penstemon albomarginatus</i>	BLM-S; FWS-SC; NV-S2	Inhabits desert sand dune habitats and Mojavean desertscrub communities at elevations below 3,600 ft. Nearest recorded occurrence is approximately 17 mi east of the SEZ. About 2,464,200 acres of potentially suitable habitat occurs within the SEZ region.	6,780 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	96,150 acres of potentially suitable habitat (3.9% of available potentially suitable habitat)	Small overall impact. See Ash Meadows buckwheat for a list of other potential mitigations measures.

TABLE 11.1.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Reptiles Desert tortoise	<i>Gopherus agassizii</i>	ESA-T; NV-P; NV-S2	Mojave and Sonoran desert creosotebush communities on firm soils for digging burrows. Often found along riverbanks, washes, canyon bottoms, creosote flats, and desert oases. Known to occur on the SEZ. About 2,717,800 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	92,000 acres of potentially suitable habitat (3.4% of available potentially suitable habitat)	Small overall impact. Pre-disturbance surveys, avoidance or minimization of disturbance to occupied habitats on the SEZ, translocation of individuals from areas of direct effects, or compensatory mitigation of direct effects on occupied habitats could reduce impacts. The potential for impact and need for mitigation should be determined in consultation with the USFWS and NDOW.
Birds Crissal thrasher	<i>Toxostoma crissale</i>	BLM-S	A local and uncommon resident in southern Nevada outside of the Colorado River Valley. Occupies dense thickets of shrubs or low trees in riparian habitats. About 4,000 acres of potentially suitable habitat occurs within the SEZ region.	0 acres	85 acres of potentially suitable habitat (2.1% of available potentially suitable habitat)	Small overall impact; no direct effects. No species-specific mitigation is warranted.
Golden eagle	<i>Aquila chrysaetos</i>	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 2,800,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	110,000 acres of potentially suitable habitat (3.9% 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 11.1.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Birds (Cont.)						
Gray vireo	<i>Vireo vicinior</i>	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 3,600,000 acres of potentially suitable habitat occurs within the SEZ region.	0 acres	6,200 acres of potentially suitable habitat (1.7% of available potentially suitable habitat)	Small overall impact; no direct effects. No species-specific mitigation is warranted.
Le Conte's thrasher	<i>Toxostoma lecontei</i>	BLM-S	An uncommon to rare local resident in southwestern deserts. Occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Nests in dense, spiny shrubs or densely branched cactus in desert wash habitat. About 1,500,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.6% of available potentially suitable habitat)	101,350 acres of potentially suitable habitat (6.8% of available potentially suitable habitat)	Small overall impact on foraging and nesting habitat. Pre-disturbance surveys, avoidance or minimization of disturbance to occupied habitats in the areas of direct effects (particularly within desert wash habitats); or compensatory mitigation of direct effects on occupied habitats could reduce impacts.
Loggerhead shrike	<i>Lanius ludovicianus</i>	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 2,270,000 acres of potentially suitable habitat occurs within the SEZ region.	0 acres	22,900 acres of potentially suitable habitat (1.0% of available potentially suitable habitat)	Small overall impact; no direct effects. No species-specific mitigation is warranted.

TABLE 11.1.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Birds (Cont.)						
Long-eared owl	<i>Asio otus</i>	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 2,500,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	101,500 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 effects.
Lucy's warbler	<i>Vermivora luciae</i>	BLM-S	An uncommon summer resident and breeder in desert riparian areas. Occurs in desert wash habitats, especially those dominated by mesquite and saltcedar. Nests in tiny cavities in riparian woodlands. About 4,500 acres of potentially suitable habitat occurs within the SEZ region.	0 acres	85 acres of potentially suitable habitat (1.9% of available potentially suitable habitat)	Small overall impact; no direct effects. No species-specific mitigation is warranted.
Prairie falcon	<i>Falco mexicanus</i>	BLM-S	Year-round resident in the SEZ region, primarily in open habitats in mountainous areas, steppe, grasslands, or cultivated areas. Typically nests in well-sheltered ledges of rocky cliffs and outcrops. About 2,338,500 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	105,000 acres of potentially suitable habitat (4.5% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.

TABLE 11.1.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Mammals						
Big brown bat	<i>Eptesicus fuscus</i>	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 1,500,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.6% of available potentially suitable habitat)	105,000 acres of potentially suitable habitat (7.0% 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	<i>Tadarida brasiliensis</i>	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 1,800,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.5% of available potentially suitable habitat)	106,000 acres of potentially suitable habitat (5.9% 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.
California myotis	<i>Myotis californicus</i>	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 2,000,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.4% of available potentially suitable habitat)	105,000 acres of potentially suitable habitat (5.3% 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.

TABLE 11.1.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Mammals (Cont.)						
Hoary bat	<i>Lasiurus cinereus</i>	BLM-S	The most widespread North American bat species, occurs throughout southern Nevada in various habitat types. Occurs in habitats such as woodlands, foothills, desert shrublands, and chaparral. Roosts primarily in trees. About 1,800,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.5% of available potentially suitable habitat)	105,000 acres of potentially suitable habitat (5.8% 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-legged myotis	<i>Myotis volans</i>	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 1,800,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.5% of available potentially suitable habitat)	105,000 acres of potentially suitable habitat (5.8% 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.

TABLE 11.1.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Mammals (Cont.)						
Silver-haired bat	<i>Lasiorycteris noctivagans</i>	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 1,400,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.6% of available potentially suitable habitat)	105,000 acres of potentially suitable habitat (7.5% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.
Western pipistrelle	<i>Pipistrellus Hesperus</i>	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 2,500,000 acres of potentially suitable habitat occurs within the SEZ region.	8,470 acres of potentially suitable habitat lost (0.3% of available potentially suitable habitat)	105,000 acres of potentially suitable habitat (4.3% 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.

^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 11.1.12.1-1 of the Draft Solar PEIS.

^b BLM-S = listed as sensitive by the BLM; ESA-T = listed as threatened under the ESA; FWS-SC = USFWS species of concern; NV-P = protected in the state of Nevada under Nevada Revised Statutes (NRS) 501.110 (animals) or NRS 527 (plants); NV-S1 = ranked as S1 in the state of Nevada; NV-S2 = ranked as S2 in the state of Nevada.

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

Footnotes continued on next page.

TABLE 11.1.12.1-1 (Cont.)

-
- ^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 maintenance of an altered environment associated with operations.
- ^f Area of indirect effects was assumed to be the area adjacent to the SEZ within 5 mi (8 km) of the SEZ boundary where ground-disturbing activities would not occur. Indirect effects include effects from surface runoff, dust, noise, lighting, and so on from project developments. The potential degree of indirect effects would decrease with increasing distance away from the SEZ.
- ^g Overall impact magnitude categories were based on professional judgment and are as follows: (1) *small*: $\leq 1\%$ 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 $\leq 10\%$ of the population or its habitat would be lost and the activity would result in a measurable but moderate (not destabilizing) change in carrying capacity or population size in the affected area; (3) *large*: $>10\%$ of a population or its habitat would be lost and the activity would result in a large, measurable, and destabilizing change in carrying capacity or population size in the affected area. Note that much greater weight was given to the magnitude of direct effects because those effects would be difficult to mitigate. Design features would reduce most indirect effects to negligible levels.
- ^h Species-specific mitigations are suggested here, but final mitigations should be developed in consultation with state and federal agencies and should be based on pre-disturbance surveys.
- ⁱ Species in bold text have been recorded or have designated critical habitat within 5 mi (8 km) of the SEZ boundary.
- ^j To convert ft to m, multiply by 0.3048.
- ^k To convert mi to km, multiply by 1.6093.
- ^l To convert acres to km², multiply by 0.004047.

1 Solar PEIS. It inhabits desert dunes and desertscrub communities of the Mojave Desert at
2 elevations between 2,000 and 3,600 ft (600 and 1,100 m). The nearest known occurrences are
3 approximately 17 mi (27 km) east of the proposed Amargosa Valley SEZ. Potentially suitable
4 habitat for the species occurs on the SEZ and other portions of the affected area
5 (Table 11.1.12.1-1).
6
7

8 **Crissal Thrasher** 9

10 The crissal thrasher is a local and uncommon resident in southern Nevada outside of the
11 Colorado River Valley, where it is a summer breeding resident. This species was not analyzed
12 for the Amargosa Valley SEZ in the Draft Solar PEIS. The species occurs in dense thickets of
13 shrubs or low trees in riparian habitats. On the basis of an evaluation of SWReGAP habitat
14 suitability models for this species, potentially suitable habitat does not occur on the SEZ;
15 however, potentially suitable breeding and nonbreeding habitat may occur outside the SEZ in the
16 area of indirect effects (Table 11.1.12.1-1).
17
18

19 **Golden Eagle** 20

21 The golden eagle is an uncommon to common permanent resident in southern Nevada.
22 This species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The species
23 inhabits rolling foothills, mountain areas, and desert shrublands. It nests on cliff faces and in
24 large trees in open areas. Potentially suitable foraging habitat for this species may occur on the
25 SEZ and throughout the area of indirect effects (Table 11.1.12.1-1). On the basis of an evaluation
26 of SWReGAP land cover types, potentially suitable nesting (cliffs and rock outcrops) does not
27 occur on the SEZ or area of indirect effects (Table 11.1.12.1-1).
28
29

30 **Gray Vireo** 31

32 The gray vireo is an uncommon summer resident in southern Nevada. This species was
33 not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The species occurs in arid
34 environments such as pinyon-juniper, chaparral, and desert shrublands. It builds open-cup nests
35 of plant material in forked branches of shrubs or small trees. On the basis of an evaluation of
36 SWReGAP habitat suitability models for this species, potentially suitable habitat does not occur
37 on the SEZ; however, potentially suitable breeding and nonbreeding habitat may occur outside
38 the SEZ in the area of indirect effects (Table 11.1.12.1-1).
39
40

41 **Le Conte's Thrasher** 42

43 The Le Conte's thrasher is an uncommon to rare local resident in desert environments of
44 the southwestern United States. This species was not analyzed for the Amargosa Valley SEZ in
45 the Draft Solar PEIS. The species inhabits open desert wash, desertscrub, alkali desertscrub, and
46 desert succulent scrub habitats. It nests in dense, spiny shrubs, or densely branched cactus in

1 desert wash habitat. Potentially suitable foraging and nesting habitat for this species may occur
2 on the SEZ and throughout the area of indirect effects (Table 11.1.12.1-1).

5 **Loggerhead Shrike**

6
7 The loggerhead shrike is a common winter resident in lowlands and foothills of southern
8 Nevada. This species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS.
9 The species occurs in open habitats with shrubs, trees, utility lines, or other perches. Highest
10 density occurs in open-canopied foothill forests. On the basis of an evaluation of SWReGAP
11 habitat suitability models for this species, potentially suitable habitat does not occur on the SEZ;
12 however, potentially suitable foraging habitat may occur outside the SEZ in the area of indirect
13 effects (Table 11.1.12.1-1).

16 **Long-Eared Owl**

17
18 The long-eared owl is an uncommon year-round resident in southern Nevada. This
19 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The species
20 inhabits desert shrubland environments in proximity to riparian areas such as desert washes.
21 It nests in trees using old nests from other birds or squirrels. Potentially suitable foraging
22 habitat for this species may occur on the SEZ and throughout the area of indirect effects
23 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
24 suitable nesting habitat (forests) does not occur on the SEZ or area of indirect effects
25 (Table 11.1.12.1-1).

28 **Lucy's Warbler**

29
30 The Lucy's warbler is an uncommon summer resident and breeder in desert riparian areas
31 of southern Nevada. This species was not analyzed for the Amargosa Valley SEZ in the Draft
32 Solar PEIS. The species inhabits desert wash habitats, especially those dominated by mesquite
33 and saltcedar. It nests in tiny cavities in riparian woodlands. On the basis of an evaluation of
34 SWReGAP habitat suitability models for this species, potentially suitable habitat does not occur
35 on the SEZ; however, potentially suitable breeding and nonbreeding habitat may occur outside
36 the SEZ in the area of indirect effects (Table 11.1.12.1-1).

39 **Prairie Falcon**

40
41 The prairie falcon occurs throughout the western United States. It is a year-round resident
42 within the Amargosa Valley SEZ region. This species was analyzed for the Amargosa Valley
43 SEZ in the Draft Solar PEIS. The species occurs in open habitats in mountainous areas,
44 sagebrush-steppe, grasslands, or cultivated areas. Nests are typically constructed in well-
45 sheltered ledges of rocky cliffs and outcrops. This species occurs in Nye County, Nevada, and
46 potentially suitable foraging habitat occurs on the SEZ and in other portions of the affected area

1 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
2 suitable nesting habitat (cliffs and rock outcrops) does not occur on the SEZ or within the area of
3 indirect effects.
4

6 **Big Brown Bat**

7
8 The big brown bat is a fairly common year-round resident in southern Nevada. This
9 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The big brown
10 bat is uncommon in desert habitats but may occur in desert shrublands that are in close proximity
11 to water sources. The species inhabits desert shrubland environments in proximity to riparian
12 areas such as desert washes. It roosts in buildings, caves, mines, and trees. Potentially suitable
13 foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects
14 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
15 suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ or area of indirect
16 effects (Table 11.1.12.1-1).
17

19 **Brazilian Free-Tailed Bat**

20
21 The Brazilian free-tailed bat is a fairly common year-round resident in southern Nevada.
22 This species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The species
23 inhabits woodlands, shrublands, and grasslands. It roosts in caves and crevices. Potentially
24 suitable foraging habitat for this species may occur on the SEZ and throughout the area of
25 indirect effects (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover
26 types, potentially suitable roosting habitat (rock outcrops) does not occur on the SEZ or area of
27 indirect effects (Table 11.1.12.1-1).
28

30 **California Myotis**

31
32 The California myotis is a fairly common year-round resident in southern Nevada. This
33 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The species
34 inhabits desert, chaparral, woodlands, and forests. It roosts primarily in crevices but will also use
35 buildings, mines, and hollow trees. Potentially suitable foraging habitat for this species may
36 occur on the SEZ and throughout the area of indirect effects (Table 11.1.12.1-1). On the basis of
37 an evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests and
38 rock outcrops) does not occur on the SEZ or area of indirect effects (Table 11.1.12.1-1).
39

41 **Hoary Bat**

42
43 The hoary bat is a fairly common year-round resident in southern Nevada. This species
44 was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The species inhabits
45 woodlands, foothills, desert shrublands, and chaparral. It roosts primarily in trees. Potentially
46 suitable foraging habitat for this species may occur on the SEZ and throughout the area of

1 indirect effects (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover
2 types, potentially suitable roosting habitat (forests) does not occur on the SEZ or area of indirect
3 effects (Table 11.1.12.1-1).
4
5

6 **Long-Legged Myotis**

7

8 The long-legged myotis is a common to uncommon year-round resident in southern
9 Nevada. This species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS.
10 This species is uncommon in desert and arid grassland environments and most common in
11 woodlands above 4,000-ft (1,219-m) elevation. It forages in chaparral, scrub, woodlands,
12 and desert shrublands and roosts in trees, caves, and crevices. Potentially suitable foraging
13 habitat for this species may occur on the SEZ and throughout the area of indirect effects
14 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
15 suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ or area of indirect
16 effects (Table 11.1.12.1-1).
17
18

19 **Silver-Haired Bat**

20

21 The silver-haired bat is an uncommon year-round resident in southern Nevada. This
22 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The species
23 inhabits coniferous forests, foothill woodlands, and montane riparian habitats. It may also forage
24 in desert shrublands. This species primarily roosts in hollow trees. Potentially suitable foraging
25 habitat for this species may occur on the SEZ and throughout the area of indirect effects
26 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
27 suitable roosting habitat (forests) does not occur on the SEZ or area of indirect effects
28 (Table 11.1.12.1-1).
29
30

31 **Western Pipistrelle**

32

33 The western pipistrelle is a common year-round resident in southern Nevada. This
34 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The species
35 inhabits mountain foothill woodlands, desert shrublands, desert washes, and pinyon-juniper
36 woodlands. It roosts primarily in rock crevices and occasionally in mines and caves. Potentially
37 suitable foraging habitat for this species may occur on the SEZ and throughout the area of
38 indirect effects (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover
39 types, potentially suitable roosting habitat (rock outcrops) does not occur on the SEZ or area of
40 indirect effects (Table 11.1.12.1-1).
41
42

43 ***11.1.12.1.3 Rare Species***

44

45 There are three rare species (ranked S1 or S2 in Nevada) that have not been discussed as
46 ESA-listed species (Section 11.1.12.1.1) or BLM-designated sensitive (Section 11.1.12.1.2): the

1 Ash Meadows buckwheat, Panamint Mountains bedstraw, and weasel phacelia. These three
2 species were analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS, and they are
3 re-evaluated in this Final Solar PEIS. Each of these species has the potential to occur in the SEZ
4 and portions of the area of indirect effects. Of these species, however, only the Ash Meadows
5 buckwheat is known to occur within 5 mi (8 km) of the proposed Amargosa Valley SEZ
6 (Table 11.1.12.1-1).

9 11.1.12.2 Impacts

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

16
17 As presented in the Draft Solar PEIS, solar energy development within the Amargosa
18 Valley SEZ could affect potentially suitable habitats of special status species. The analysis
19 presented in the Draft Solar PEIS for the original Amargosa Valley SEZ developable area
20 indicated that development would result in no impact or a small overall impact on most special
21 status species (Table 11.1.12.1-1 in the Draft Solar PEIS). However, development was
22 determined to result in moderate or large impacts on some special status species. In the Draft
23 Solar PEIS, those 25 special status species that could be affected by groundwater withdrawals on
24 the SEZ were determined to have impacts that ranged from small to large depending upon the
25 scale of development and water needs to serve development on the SEZ. Development within the
26 revised Amargosa Valley SEZ could still affect the same 52 species evaluated in the Draft Solar
27 PEIS. However, the reduction in the SEZ boundaries and in the developable area of the
28 Amargosa Valley SEZ would result in reduced impact levels compared to original estimates in
29 the Draft Solar PEIS. Pre-disturbance consultation with the BLM and the necessary state and
30 federal agencies should be conducted to determine the project-specific water needs and the
31 potential for impact on these species (these groundwater-dependent species are listed in
32 Table 11.1.12.1-1 of the Draft Solar PEIS and are listed below in Section 11.1.12.3). Those
33 seven species that were determined to have moderate or large impacts in the Draft Solar PEIS are
34 discussed below. Species for which overall impacts were determined to be small in the Draft
35 Solar PEIS are not discussed because impacts on these species in the revised SEZ footprint are
36 expected to remain small.

37
38 In addition, impacts on the 14 BLM-designated sensitive species that were not
39 evaluated for the Amargosa Valley SEZ in the Draft Solar PEIS are discussed below and in
40 Table 11.1.12.1-1. The impact assessment for these additional species was carried out in the
41 same way as for those species analyzed in the Draft Solar PEIS (Section 11.1.12.2 of the Draft
42 Solar PEIS).

1 ***11.1.12.2.1 Impacts on Species Listed under the Endangered Species Act***
2

3 The desert tortoise is listed as threatened under the ESA and is known to occur
4 throughout the SEZ affected area. This species was evaluated in the Draft Solar PEIS. It is
5 widespread in Mojave desertscrub communities where firm soils for digging burrows are present.
6 The desert tortoise has the potential to occur within the revised SEZ on the basis of observed
7 occurrences on and near the SEZ and the presence of apparently suitable habitat in the SEZ
8 (Figure 11.1.12.1-1; Table 11.1.12.1-1). According to habitat suitability models, approximately
9 8,470 acres (34 km²) of potentially suitable habitat on the revised SEZ could be directly
10 affected by construction and operations of solar energy development on the revised SEZ
11 (Table 11.1.12.1-1). This direct effects area represents about 0.3% of available suitable habitat of
12 the desert tortoise in the region. Much of this habitat within the SEZ is considered to be highly
13 suitable (modeled suitability value ≥ 0.8 out of 1.0) according to the USGS desert tortoise habitat
14 suitability model (Nussear et al. 2009). About 92,000 acres (372 km²) of suitable habitat occurs
15 in the area of potential indirect effects; this area represents about 3.4% of the available suitable
16 habitat in the region (Table 11.1.12.1-1).
17

18 Information provided by the USFWS since the publication of the Draft Solar PEIS has
19 identified the revised Amargosa Valley SEZ as being situated in an area that provides habitat and
20 genetic connectivity between areas with greater habitat suitability (Ashe 2012). The USFWS has
21 also determined that some portions of the SEZ are within high-priority connectivity areas, which
22 are necessary to facilitate natural processes of gene exchange between populations in order to
23 maintain population viability. Solar energy development on the Amargosa Valley SEZ, therefore,
24 may isolate and fragment these tortoise populations by creating impediments to natural migration
25 patterns.
26

27 In the Draft Solar PEIS, it was determined that the overall impact on the desert tortoise
28 from solar energy development within the Amargosa Valley SEZ would be moderate, because
29 the amount of potentially suitable habitat in the area of direct effects represents greater than
30 1% but less than 10% of potentially suitable habitat in the region. On the basis of the revised
31 SEZ boundaries, the overall impact on the desert tortoise from construction, operation, and
32 decommissioning of utility-scale solar facilities within the revised Amargosa Valley SEZ is
33 considered to be small, because the amount of potentially suitable habitat for this species in the
34 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
35 implementation of programmatic design features alone is unlikely to reduce these impacts to
36 negligible levels. Avoidance of potentially suitable habitats for this species is not a feasible
37 means of mitigating impacts, because these habitats (desertscrub) are widespread throughout the
38 area of direct effects. Preconstruction surveys to determine the abundance of desert tortoises on
39 the SEZ and the implementation of a desert tortoise translocation plan and compensation plan
40 could further reduce direct impacts.
41

42 Development of actions to reduce impacts (e.g., reasonable and prudent alternatives,
43 reasonable and prudent measures, and terms and conditions) for the desert tortoise would require
44 formal consultation with the USFWS under Section 7 of the ESA. This project-level consultation
45 will tier from the programmatic ESA Section 7 consultation that will be completed with the PEIS
46 ROD. Priority should be given to the development of a thorough survey protocol and measures to

1 avoid impacts on known tortoise populations. If necessary, minimization measures and
2 mitigation measures, which could potentially include translocation actions and compensatory
3 mitigation, may be required. These consultations may be used to authorize incidental take
4 statements per Section 10 of the ESA (if necessary). Consultation with the NDOW should also
5 occur to determine any state mitigation requirements.
6

7 Inherent dangers to tortoises are associated with their capture, handling, and translocation
8 from the SEZ. These actions, if conducted improperly, can result in injury or death. To minimize
9 these risks and as stated above, the desert tortoise translocation plan should be developed in
10 consultation with the USFWS and should follow the *Guidelines for Handling Desert Tortoises*
11 *During Construction Projects* (Desert Tortoise Council 1994) and other current translocation
12 guidance provided by the USFWS. Consultation will identify potentially suitable recipient
13 locations, density thresholds for tortoise populations in recipient locations, and procedures for
14 pre-disturbance clearance surveys and tortoise handling, as well as disease-testing and post-
15 translocation monitoring and reporting requirements. Despite some risk of mortality or decreased
16 fitness, translocation is widely accepted as a useful strategy for the conservation of the desert
17 tortoise (Field et al. 2007).
18

19 To offset impacts of solar development on the SEZ, compensatory mitigation may be
20 needed to balance the acreage of habitat lost with acquisition of lands that would be improved
21 and protected for desert tortoise populations (USFWS 1994). Compensation can be accomplished
22 by improving the carrying capacity for the desert tortoise on the acquired lands. Other mitigation
23 actions may include funding for the habitat enhancement of the desert tortoise on existing
24 federal lands. Consultation with the USFWS and NDOW would be necessary to determine the
25 appropriate mitigation ratio to acquire, enhance, and preserve desert tortoise compensation lands.
26

27 ***11.1.12.2 Impacts on BLM-Designated Sensitive Species***

28 Impacts on the 18 BLM-designated sensitive species that either were re-evaluated for this
29 Final Solar PEIS or are new species determined to potentially occur in the Amargosa Valley SEZ
30 affected area are discussed below.
31
32

33 **Death Valley Beardtongue**

34
35 The Death Valley beardtongue was analyzed for the Amargosa Valley SEZ in the Draft
36 Solar PEIS. The species is not known to occur in the affected area of the revised Amargosa
37 Valley SEZ; however, approximately 6,780 acres (27 km²) of potentially suitable habitat on
38 the revised SEZ could be directly affected by construction and operations (Table 11.1.12.1-1).
39 This direct effects area represents about 0.4% of potentially suitable habitat in the SEZ region.
40 About 95,000 acres (384 km²) of potentially suitable habitat occurs in the area of indirect effects;
41 this area represents about 3.9% of the available suitable habitat in the SEZ region
42 (Table 11.1.12.1-1).
43
44
45

1 In the Draft Solar PEIS, it was determined that the overall impact on the Death Valley
2 beardtongue from solar energy development within the proposed Amargosa Valley SEZ was
3 moderate, because the amount of potentially suitable habitat for this species in the area of direct
4 effects represents greater than 1% but less than 10% of potentially suitable habitat in the region.
5 On the basis of the revised SEZ boundaries, the overall impact on the Death Valley beardtongue
6 from construction, operation, and decommissioning of utility-scale solar facilities within the
7 revised Amargosa Valley SEZ is considered to be small, because the amount of potentially
8 suitable habitat for this species in the area of direct effects represents less than 1% of potentially
9 suitable habitat in the region.

10
11 Avoidance of all potentially suitable habitats is not a feasible means to mitigate impacts
12 on the Death Valley beardtongue, because potentially suitable desertscrub habitat is widespread
13 throughout the area of direct effects. Impacts could be reduced by conducting pre-disturbance
14 surveys and avoiding or minimizing disturbance to occupied habitats on the SEZ. If avoidance
15 or minimization is not a feasible option, plants could be translocated from areas of direct effects
16 to protected areas that would not be affected directly or indirectly by future development.
17 Alternatively, or in combination with translocation, a compensatory mitigation plan could be
18 developed and implemented to offset direct effects on occupied habitats. Compensation could
19 involve the protection and enhancement of existing occupied or suitable habitats to compensate
20 for habitats lost to development. A comprehensive mitigation strategy that uses one or more of
21 these options could be designed to completely offset the impacts of development.

22 23 24 **White-Margined Beardtongue**

25
26 The white-margined beardtongue was analyzed for the Amargosa Valley SEZ in the Draft
27 Solar PEIS. The species is not known to occur in the affected area of the revised Amargosa
28 Valley SEZ; however, approximately 6,780 acres (27 km²) of potentially suitable habitat on
29 the SEZ could be directly affected by construction and operations (Table 11.1.12.1-1). This
30 direct effects area represents about 0.3% of potentially suitable habitat in the SEZ region. About
31 96,150 acres (389 km²) of potentially suitable habitat occurs in the area of indirect effects; this
32 area represents about 3.9% of the potentially suitable habitat in the SEZ region
33 (Table 11.1.12.1-1).

34
35 In the Draft Solar PEIS, it was determined that the overall impact on the white-margined
36 beardtongue from solar energy development within the proposed Amargosa Valley SEZ was
37 moderate, because the amount of potentially suitable habitat for this species in the area of
38 direct effects represents greater than 1% but less than 10% of potentially suitable habitat in the
39 region. On the basis of the revised SEZ boundaries, the overall impact on the white-margined
40 beardtongue from construction, operation, and decommissioning of utility-scale solar facilities
41 within the revised Amargosa Valley SEZ is considered to be small, because the amount of
42 potentially suitable habitat for this species in the area of direct effects represents less than 1%
43 of potentially suitable habitat in the region.

44
45 Avoidance of all potentially suitable habitats is not a feasible way to mitigate impacts on
46 the white-margined beardtongue, because potentially suitable desertscrub habitat is widespread

1 throughout the area of direct effects. However, impacts could be reduced to negligible levels
2 with the implementation of programmatic design features and the mitigation options described
3 previously for the Death Valley beardtongue. The need for mitigation, other than programmatic
4 design features, should be determined by conducting preconstruction surveys for the species and
5 its habitat on the SEZ.
6
7

8 **Crissal Thrasher**

9

10 The crissal thrasher was not analyzed for the Amargosa Valley SEZ in the Draft Solar
11 PEIS. This species is a local and uncommon resident in southern Nevada outside of the Colorado
12 River Valley, where it is a summer breeding resident. The crissal thrasher is not known to occur
13 on the revised Amargosa Valley SEZ, and suitable habitat is not expected to occur on the SEZ;
14 however, on the basis of an evaluation of the SWReGAP habitat suitability model for this
15 species, approximately 85 acres (0.3 km²) of potentially suitable breeding and nonbreeding
16 habitat may occur outside the SEZ in the area of indirect effects. This area represents about 2.1%
17 of the potentially suitable foraging habitat in the SEZ region (Table 11.1.12.1-1).
18

19 The overall impact on the crissal thrasher from construction, operation, and
20 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
21 is considered small, because no potentially suitable habitat for this species occurs in the area of
22 direct effects and only indirect effects are possible. The implementation of programmatic design
23 features may be sufficient to reduce indirect impacts on this species to negligible levels.
24
25

26 **Golden Eagle**

27

28 The golden eagle was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS.
29 This species is an uncommon to common permanent resident in southern Nevada, and potentially
30 suitable foraging habitat is expected to occur in the affected area. Approximately 8,470 acres
31 (34 km²) of potentially suitable foraging habitat on the SEZ could be directly affected by
32 construction and operations (Table 11.1.12.1-1). This direct effects area represents 0.3% of
33 potentially suitable habitat in the SEZ region. About 110,000 acres (445 km²) of potentially
34 suitable foraging habitat occurs in the area of indirect effects; this area represents about 3.9% of
35 the available suitable foraging habitat in the SEZ region (Table 11.1.12.1-1). Most of this area
36 could serve as foraging habitat (open shrublands). On the basis of an evaluation of SWReGAP
37 land cover types, potentially suitable nesting habitat (cliffs and rock outcrops) does not occur on
38 the SEZ or within the area of indirect effects.
39

40 The overall impact on the golden eagle from construction, operation, and
41 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
42 is considered small, because the amount of potentially suitable foraging habitat for this species in
43 the area of direct effects represents less than 1% of potentially suitable foraging habitat in the
44 SEZ region. The implementation of programmatic design features is expected to be sufficient to
45 reduce indirect impacts on this species to negligible levels. Avoidance of direct impacts on all
46 potentially suitable foraging habitat is not a feasible way to mitigate impacts on the golden eagle,

1 because potentially suitable shrubland is widespread throughout the area of direct effects and
2 readily available in other portions of the affected area.
3
4

5 **Gray Vireo**

6

7 The gray vireo was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS.
8 This species is an uncommon summer resident in southern Nevada. The gray vireo is not known
9 to occur on the revised Amargosa Valley SEZ, and suitable habitat is not expected to occur on
10 the SEZ; however, on the basis of an evaluation of the SWReGAP habitat suitability model for
11 this species, approximately 6,200 acres (25 km²) of potentially suitable breeding and
12 nonbreeding habitat may occur outside the SEZ in the area of indirect effects. This area
13 represents about 1.7% of the potentially suitable foraging habitat in the SEZ region
14 (Table 11.1.12.1-1).
15

16 The overall impact on the gray vireo from construction, operation, and decommissioning
17 of utility-scale solar energy facilities within the revised Amargosa Valley SEZ is considered
18 small, because no potentially suitable habitat for this species occurs in the area of direct effects
19 and only indirect effects are possible. The implementation of programmatic design features may
20 be sufficient to reduce indirect impacts on this species to negligible levels.
21
22

23 **Le Conte's Thrasher**

24

25 The Le Conte's thrasher is an uncommon to rare local resident in desert environments of
26 the southwestern United States. This species was not analyzed for the Amargosa Valley SEZ in
27 the Draft Solar PEIS. The species inhabits open desert wash, desert scrub, alkali desert scrub, and
28 desert succulent scrub habitats. Approximately 8,470 acres (34 km²) of potentially suitable
29 foraging or nesting habitat on the SEZ could be directly affected by construction and operations
30 (Table 11.1.12.1-1). This direct effects area represents 0.6% of potentially suitable habitat in the
31 SEZ region. About 101,350 acres (410 km²) of potentially suitable foraging habitat occurs in the
32 area of indirect effects; this area represents about 6.8% of the available suitable foraging habitat
33 in the SEZ region (Table 11.1.12.1-1).
34

35 The overall impact on the Le Conte's thrasher from construction, operation, and
36 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
37 is considered small, because the amount of potentially suitable habitat for this species in the area
38 of direct effects represents less than 1% of potentially suitable habitat in the SEZ region. The
39 implementation of programmatic design features is expected to be sufficient to reduce indirect
40 impacts to negligible levels.
41

42 Avoidance of all potentially suitable habitats is not a feasible way to mitigate impacts on
43 the Le Conte's thrasher, because potentially suitable shrubland habitat is widespread throughout
44 the area of direct effects and readily available in other portions of the SEZ region. Impacts on
45 the Le Conte's thrasher could be reduced by conducting pre-disturbance surveys and avoiding
46 or minimizing disturbance to occupied nests in the area of direct effects. If avoidance or

1 minimization is not a feasible option, a compensatory mitigation plan could be developed and
2 implemented to offset direct effects on occupied habitats. Compensation could involve the
3 protection and enhancement of existing occupied or suitable habitats to make up for habitats lost
4 to development. A comprehensive mitigation strategy that uses one or both of these options
5 could be designed to completely offset the impacts of development. The need for mitigation,
6 other than design features, should be determined by conducting pre-disturbance surveys for the
7 species and its habitat in the area of direct effects.
8
9

10 **Loggerhead Shrike**

11
12 The loggerhead shrike was not analyzed for the Amargosa Valley SEZ in the Draft Solar
13 PEIS. This species is a common winter resident in lowlands and foothills of southern Nevada.
14 The loggerhead shrike is not known to occur on the revised Amargosa Valley SEZ, and suitable
15 habitat is not expected to occur on the SEZ; however, on the basis of an evaluation of the
16 SWReGAP habitat suitability model for this species, approximately 22,900 acres (93 km²) of
17 potentially suitable foraging habitat may occur outside the SEZ in the area of indirect effects.
18 This area represents about 1.0% of the potentially suitable foraging habitat in the SEZ region
19 (Table 11.1.12.1-1).
20

21 The overall impact on the loggerhead shrike from construction, operation, and
22 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
23 is considered small, because no potentially suitable habitat for this species occurs in the area of
24 direct effects and only indirect effects are possible. The implementation of programmatic design
25 features may be sufficient to reduce indirect impacts on this species to negligible levels.
26
27

28 **Long-Eared Owl**

29
30 The long-eared owl is an uncommon year-round resident in southern Nevada. This
31 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. The species
32 inhabits desert shrubland environments in proximity to riparian areas such as desert washes. It
33 nests in trees using old nests from other birds or squirrels. Potentially suitable foraging habitat
34 for this species may occur on the SEZ and throughout the area of indirect effects
35 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
36 suitable nesting habitat (forests) does not occur on the SEZ or within the area of indirect effects
37 (Table 11.1.12.1-1).
38

39 The long-eared owl was not analyzed for the Amargosa Valley SEZ in the Draft Solar
40 PEIS. This species is an uncommon to common permanent resident in southern Nevada, and
41 potentially suitable foraging habitat is expected to occur in the affected area. Approximately
42 8,470 acres (34 km²) of potentially suitable foraging habitat on the SEZ could be directly
43 affected by construction and operations (Table 11.1.12.1-1). This direct effects area represents
44 0.3% of potentially suitable habitat in the SEZ region. About 101,500 acres (411 km²) of
45 potentially suitable foraging habitat occurs in the area of indirect effects; this area represents
46 about 4.1% of the available suitable foraging habitat in the SEZ region (Table 11.1.12.1-1).

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

10 11 12 **Lucy's Warbler**

13
14 The Lucy's warbler was not analyzed for the Amargosa Valley SEZ in the Draft Solar
15 PEIS. This species is an uncommon summer resident and breeder in desert riparian areas of
16 southern Nevada. The Lucy's warbler is not known to occur on the revised Amargosa Valley
17 SEZ, and suitable habitat is not expected to occur on the SEZ; however, on the basis of an
18 evaluation of the SWReGAP habitat suitability model for this species, approximately 85 acres
19 (0.3 km²) of potentially suitable foraging or nesting habitat may occur outside the SEZ in the
20 area of indirect effects. This area represents about 1.9% of the potentially suitable foraging
21 habitat in the SEZ region (Table 11.1.12.1-1).

22
23 The overall impact on the Lucy's warbler from construction, operation, and
24 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
25 is considered small, because no potentially suitable habitat for this species occurs in the area of
26 direct effects and only indirect effects are possible. The implementation of programmatic design
27 features may be sufficient to reduce indirect impacts on this species to negligible levels.

28 29 30 **Prairie Falcon**

31
32 The prairie falcon occurs throughout the western United States. It is a year-round resident
33 within the Amargosa Valley SEZ region. This species was analyzed for the Amargosa Valley
34 SEZ in the Draft Solar PEIS. The species occurs in open habitats in mountainous areas,
35 sagebrush-steppe, grasslands, or cultivated areas. Nests are typically constructed in well-
36 sheltered ledges of rocky cliffs and outcrops. Approximately 8,470 acres (34 km²) of potentially
37 suitable habitat on the revised SEZ could be directly affected by construction and operations
38 (Table 11.1.12.1-1). This direct effects area represents 0.4% of potentially suitable habitat in the
39 SEZ region. About 105,000 acres (425 km²) of potentially suitable habitat occurs in the area of
40 indirect effects; this area represents about 4.5% of the potentially suitable habitat in the SEZ
41 region (Table 11.1.12.1-1). Most of this area could serve as foraging habitat (open shrublands).
42 On the basis of an evaluation of SWReGAP land cover types, potentially suitable nesting habitat
43 (cliffs and rock outcrops) does not occur on the SEZ or within the area of indirect effects.

44
45 In the Draft Solar PEIS, it was determined that the overall impact on the prairie falcon
46 from solar energy development within the proposed Amargosa Valley SEZ was moderate,

1 because the amount of potentially suitable habitat for this species in the area of direct effects
2 represents greater than 1% but less than 10% of potentially suitable habitat in the region. On the
3 basis of the revised SEZ boundaries, the overall impact on the prairie falcon from construction,
4 operation, and decommissioning of utility-scale solar facilities within the revised Amargosa
5 Valley SEZ is considered to be small, because the amount of potentially suitable habitat for this
6 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
7 region.

8
9 The implementation of programmatic design features is expected to be sufficient to
10 reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable
11 foraging habitats to mitigate impacts on the prairie falcon is not feasible, because potentially
12 suitable foraging habitats are widespread throughout the area of direct effects and readily
13 available in other portions of the affected area.

14 15 16 **Big Brown Bat**

17
18 The big brown bat is a fairly common year-round resident in southern Nevada. This
19 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. Suitable
20 roosting habitats (caves, forests, and buildings) are not expected to occur on the SEZ, but the
21 availability of suitable roosting sites in the area of indirect effects has not been determined.
22 Approximately 8,470 acres (34 km²) of potentially suitable foraging habitat on the revised SEZ
23 could be directly affected by construction and operations (Table 11.1.12.1-1). This direct effects
24 area represents about 0.6% of potentially suitable foraging habitat in the region. About
25 105,000 acres (425 km²) of potentially suitable foraging habitat occurs in the area of indirect
26 effects; this area represents about 7.0% of the available suitable foraging habitat in the region
27 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, no suitable
28 roosting habitat (forests and rock outcrops) exists within the SEZ or within the area of indirect
29 effects.

30
31 The overall impact on the big brown bat from construction, operation, and
32 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
33 is considered small, because the amount of potentially suitable habitat for this species in the
34 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
35 implementation of programmatic design features is expected to be sufficient to reduce indirect
36 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
37 is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is
38 widespread throughout the area of direct effects and is readily available in other portions of the
39 SEZ region.

40 41 42 **Brazilian Free-Tailed Bat**

43
44 The Brazilian free-tailed bat is a fairly common year-round resident in southern Nevada.
45 This species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. Suitable
46 roosting habitats (caves, forests, and buildings) are not expected to occur on the SEZ, but the

1 availability of suitable roosting sites in the area of indirect effects has not been determined.
2 Approximately 8,470 acres (34 km²) of potentially suitable foraging habitat on the revised
3 SEZ could be directly affected by construction and operations (Table 11.1.12.1-1). This direct
4 effects area represents about 0.5% of potentially suitable foraging habitat in the region. About
5 106,000 acres (429 km²) of potentially suitable foraging habitat occurs in the area of indirect
6 effects; this area represents about 5.9% of the available suitable foraging habitat in the region
7 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, no suitable
8 roosting habitat (forests and rock outcrops) exists within the SEZ or within the area of indirect
9 effects.

10
11 The overall impact on the Brazilian free-tailed bat from construction, operation, and
12 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
13 is considered small, because the amount of potentially suitable habitat for this species in the
14 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
15 implementation of programmatic design features is expected to be sufficient to reduce indirect
16 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
17 is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is
18 widespread throughout the area of direct effects and is readily available in other portions of the
19 SEZ region.

20 21 22 **California Myotis**

23
24 The California myotis is a fairly common year-round resident in southern Nevada. This
25 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. Suitable
26 roosting habitats (forests and rock outcrops) are not expected to occur on the SEZ, but the
27 availability of suitable roosting sites in the area of indirect effects has not been determined.
28 Approximately 8,470 acres (34 km²) of potentially suitable foraging habitat on the revised SEZ
29 could be directly affected by construction and operations (Table 11.1.12.1-1). This direct
30 effects area represents about 0.4% of potentially suitable foraging habitat in the region. About
31 105,000 acres (425 km²) of potentially suitable foraging habitat occurs in the area of indirect
32 effects; this area represents about 5.3% of the available suitable foraging habitat in the region
33 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, no suitable
34 roosting habitat (forests and rock outcrops) exists within the SEZ or within the area of indirect
35 effects.

36
37 The overall impact on the California myotis from construction, operation, and
38 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
39 is considered small, because the amount of potentially suitable habitat for this species in the
40 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
41 implementation of programmatic design features is expected to be sufficient to reduce indirect
42 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
43 is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is
44 widespread throughout the area of direct effects and is readily available in other portions of the
45 SEZ region.

1 **Hoary Bat**

2
3 The hoary bat is a fairly common year-round resident in southern Nevada. This species
4 was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. Suitable roosting
5 habitats (forests) are not expected to occur on the SEZ, but the availability of suitable roosting
6 sites in the area of indirect effects has not been determined. Approximately 8,470 acres (34 km²)
7 of potentially suitable foraging habitat on the revised SEZ could be directly affected by
8 construction and operations (Table 11.1.12.1-1). This direct effects area represents about 0.5% of
9 potentially suitable foraging habitat in the region. About 105,000 acres (425 km²) of potentially
10 suitable foraging habitat occurs in the area of indirect effects; this area represents about 5.8% of
11 the available suitable foraging habitat in the region (Table 11.1.12.1-1). On the basis of an
12 evaluation of SWReGAP land cover types, no suitable roosting habitat (forests) exists within the
13 SEZ or within the area of indirect effects.

14
15 The overall impact on the hoary bat from construction, operation, and decommissioning
16 of utility-scale solar energy facilities within the revised Amargosa Valley SEZ is considered
17 small, because the amount of potentially suitable habitat for this species in the area of direct
18 effects represents less than 1% of potentially suitable habitat in the region. The implementation
19 of programmatic design features is expected to be sufficient to reduce indirect impacts on this
20 species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible
21 way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout
22 the area of direct effects and is readily available in other portions of the SEZ region.

23
24
25 **Long-Legged Myotis**

26
27 The long-legged myotis is a common to uncommon year-round resident in southern
28 Nevada. This species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS.
29 Suitable roosting habitats (forests and rock outcrops) are not expected to occur on the SEZ, but
30 the availability of suitable roosting sites in the area of indirect effects has not been determined.
31 Approximately 8,470 acres (34 km²) of potentially suitable foraging habitat on the revised SEZ
32 could be directly affected by construction and operations (Table 11.1.12.1-1). This direct effects
33 area represents about 0.5% of potentially suitable foraging habitat in the region. About
34 105,000 acres (425 km²) of potentially suitable foraging habitat occurs in the area of indirect
35 effects; this area represents about 5.8% of the available suitable foraging habitat in the region
36 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, no suitable
37 roosting habitat (forests and rock outcrops) exists within the SEZ or within the area of indirect
38 effects.

39
40 The overall impact on the long-legged myotis from construction, operation, and
41 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
42 is considered small, because the amount of potentially suitable habitat for this species in the
43 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
44 implementation of programmatic design features is expected to be sufficient to reduce indirect
45 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
46 is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is

1 widespread throughout the area of direct effects and is readily available in other portions of the
2 SEZ region.

3 4 5 **Silver-Haired Bat**

6
7 The silver-haired bat is an uncommon year-round resident in southern Nevada. This
8 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. Suitable
9 roosting habitats (forests) are not expected to occur on the SEZ, but the availability of suitable
10 roosting sites in the area of indirect effects has not been determined. Approximately 8,470 acres
11 (34 km²) of potentially suitable foraging habitat on the revised SEZ could be directly affected by
12 construction and operations (Table 11.1.12.1-1). This direct effects area represents about 0.6% of
13 potentially suitable foraging habitat in the region. About 105,000 acres (425 km²) of potentially
14 suitable foraging habitat occurs in the area of indirect effects; this area represents about 7.5% of
15 the available suitable foraging habitat in the region (Table 11.1.12.1-1). On the basis of an
16 evaluation of SWReGAP land cover types, no suitable roosting habitat (forests) exists within the
17 SEZ or within the area of indirect effects.

18
19 The overall impact on the silver-haired bat from construction, operation, and
20 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ
21 is considered small, because the amount of potentially suitable habitat for this species in the
22 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
23 implementation of programmatic design features is expected to be sufficient to reduce indirect
24 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
25 is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is
26 widespread throughout the area of direct effects and is readily available in other portions of the
27 SEZ region.

28 29 30 **Western Pipistrelle**

31
32 The western pipistrelle is a common year-round resident in southern Nevada. This
33 species was not analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS. Suitable
34 roosting habitats (forests and rock outcrops) are not expected to occur on the SEZ, but the
35 availability of suitable roosting sites in the area of indirect effects has not been determined.
36 Approximately 8,470 acres (34 km²) of potentially suitable foraging habitat on the revised SEZ
37 could be directly affected by construction and operations (Table 11.1.12.1-1). This direct
38 effects area represents about 0.3% of potentially suitable foraging habitat in the region. About
39 105,000 acres (425 km²) of potentially suitable foraging habitat occurs in the area of indirect
40 effects; this area represents about 4.3% of the available suitable foraging habitat in the region
41 (Table 11.1.12.1-1). On the basis of an evaluation of SWReGAP land cover types, no suitable
42 roosting habitat (forests and rock outcrops) exists within the SEZ or within the area of indirect
43 effects.

44
45 The overall impact on the western pipistrelle from construction, operation, and
46 decommissioning of utility-scale solar energy facilities within the revised Amargosa Valley SEZ

1 is considered small, because the amount of potentially suitable habitat for this species in the area
2 of direct effects represents less than 1% of potentially suitable habitat in the region. The
3 implementation of programmatic design features is expected to be sufficient to reduce indirect
4 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
5 is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is
6 widespread throughout the area of direct effects and is readily available in other portions of the
7 SEZ region.
8
9

10 ***11.1.12.2.3 Impacts on Rare Species***

11

12 There are three rare species (ranked S1 or S2 in Nevada) that have not been discussed as
13 ESA-listed species (Section 11.1.12.1.1) or BLM-designated sensitive (Section 11.1.12.1.2): the
14 Ash Meadows buckwheat, Panamint Mountains bedstraw, and weasel phacelia. These three
15 species were analyzed for the Amargosa Valley SEZ in the Draft Solar PEIS and they are
16 re-evaluated in this Final Solar PEIS. Each of these species has the potential to occur in the
17 revised SEZ and portions of the area of indirect effects. Of these species, however, only the Ash
18 Meadows buckwheat is known to occur within 5 mi (8 km) of the revised Amargosa Valley SEZ
19 (Table 11.1.12.1-1). Impacts on these species are presented in Table 11.1.12.1-1.
20
21

22 **11.1.12.3 SEZ-Specific Design Features and Design Feature Effectiveness**

23

24 Required programmatic design features that would reduce impacts on special status and
25 rare species are described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific
26 resources and conditions will determine how programmatic design features are applied, for
27 example:
28

- 29 • Pre-disturbance surveys shall be conducted within the SEZ to determine the
30 presence and abundance of special status species, including those identified in
31 Table 11.1.12.1-1 of the Draft Solar PEIS, as well as those additional species
32 presented in Table 11.1.12.1-1 of this Final Solar PEIS. Disturbance to
33 occupied habitats for these species shall be avoided or minimized to the extent
34 practicable. If avoiding or minimizing impacts on occupied habitats is not
35 possible, translocation of individuals from areas of direct effects or
36 compensatory mitigation of direct effects on occupied habitats may be used to
37 reduce impacts. A comprehensive mitigation strategy for special status species
38 that uses one or more of these options to offset the impacts of development
39 shall be developed in coordination with the appropriate federal and state
40 agencies.
41
- 42 • Disturbance to desert wash or riparian habitats on the SEZ shall be avoided or
43 minimized to reduce impacts on the Bullfrog Hills sweetpea, Holmgren
44 lupine, phainopepla, and Le Conte's thrasher.
45

- 1 • Groundwater withdrawals from the Amargosa Desert Basin to serve solar
2 energy development on the SEZ shall be avoided or limited to reduce or
3 prevent impacts on the following 25 groundwater-dependent special status
4 species that may occur more than 5 mi (8 km) from the SEZ boundary:
5 Amargosa niterwort, Ash Meadows blazingstar, Ash Meadows gumplant, Ash
6 Meadows ivesia, Ash Meadows sunray, spring-loving centaury, Amargosa
7 tryonia, Ash Meadows pebblesnail, crystal springsnail, distal gland
8 springsnail, elongate gland springsnail, Fairbanks springsnail, median gland
9 springsnail, minute tryonia, Oasis Valley springsnail, Point of Rocks tryonia,
10 sporting goods tryonia, Amargosa naucorid, Ash Meadows naucorid, Ash
11 Meadows Amargosa pupfish, Ash Meadows speckled dace, Devils Hole
12 pupfish, Oasis Valley speckled dace, Warm Springs Amargosa pupfish, and
13 Amargosa toad.
- 14
- 15 • Consultation with the USFWS and NDOW shall be conducted to address
16 the potential for impacts on the following 12 species listed as threatened or
17 endangered under the ESA that may be affected by solar energy development
18 on the SEZ: Amargosa niterwort, Ash Meadows blazingstar, Ash Meadows
19 gumplant, Ash Meadows ivesia, Ash Meadows sunray, spring-loving
20 centaury, Ash Meadows naucorid, Ash Meadows Amargosa pupfish, Ash
21 Meadows speckled dace, Devils Hole pupfish, Warm Springs Amargosa
22 pupfish, and desert tortoise. Consultation would identify an appropriate survey
23 protocol, avoidance and minimization measures, and, if appropriate,
24 reasonable and prudent alternatives, reasonable and prudent measures, and
25 terms and conditions for incidental take statements.
- 26
- 27 • Coordination with the USFWS and NDOW shall be conducted for the
28 following 16 species under review for listing under the ESA that may be
29 affected by solar energy development on the SEZ: Amargosa tryonia, Ash
30 Meadows pebblesnail, crystal springsnail, distal gland springsnail, elongate
31 gland springsnail, Fairbanks springsnail, median gland springsnail, minute
32 tryonia, Oasis Valley springsnail, Point of Rocks tryonia, sporting goods
33 tryonia, Amargosa naucorid, Oasis Valley speckled dace, and Amargosa toad.
34 Coordination would identify an appropriate survey protocol, and mitigation
35 requirements, which may include avoidance, minimization, translocation, or
36 compensation.
- 37
- 38 • Coordination with the USFWS and NDOW shall be conducted to address
39 potential indirect impacts (e.g., site runoff and erosion) and the effectiveness
40 of design features for the following special status species that are endemic to
41 the Big Dune system: Big Dune meloderes weevil, Giuliani's dune scarab
42 beetle, and large aegialian scarab beetle.
- 43

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

1 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
2 analyses due to changes to the SEZ boundaries, and consideration of comments received as
3 applicable, no SEZ-specific design features for special status species have been identified. Some
4 SEZ-specific design features may be identified through the process of preparing parcels for
5 competitive offer and subsequent project-specific analysis. Projects will comply with terms and
6 conditions set forth by the USFWS Biological Opinion resulting from the programmatic
7 consultation and any necessary project-specific ESA Section 7 consultations.
8
9

10 **11.1.13 Air Quality and Climate**

11 **11.1.13.1 Affected Environment**

12
13
14
15 Except as noted below, the information for air quality and climate presented in the
16 affected environment section of the Draft Solar PEIS remains essentially unchanged.
17
18

19 ***11.1.13.1.1 Existing Air Emissions***

20
21 The Draft Solar PEIS presented Nye County emissions data for 2002. More recent data
22 for 2008 (EPA 2011a) were reviewed. The two emissions inventories are from different sources
23 and assumptions; for example, the 2008 data did not include biogenic volatile organic compound
24 (VOC) emissions. All emissions except particulate matter with a diameter of 10 µm or less
25 (PM₁₀) were lower in the more recent data. PM₁₀ emissions were about 54% higher in the 2008
26 data, and emissions of particulate matter with a diameter of 2.5 µm or less (PM_{2.5}) were about
27 73% of those in the 2002 data. However, these changes would not affect modeled air quality
28 impacts presented in this update.
29
30

31 ***11.1.13.1.2 Air Quality***

32
33 The calendar quarterly average National Ambient Air Quality Standard (NAAQS) of
34 1.5 µg/m³ for lead (Pb) presented in Table 11.1.13.1-2 of the Draft Solar PEIS has been replaced
35 by the rolling 3-month standard (0.15 µg/m³). The federal 24-hour and annual sulfur dioxide
36 (SO₂) and 1-hour ozone (O₃) have been revoked as well (EPA 2011b). These changes will not
37 affect the modeled air quality impacts presented in this Final Solar PEIS. Nevada State Ambient
38 Air Quality Standards (SAAQS) have not been changed.
39

40 Given the reduced size of the proposed Amargosa Valley SEZ, the distances to nearby
41 Class I areas are larger by a few miles than those in the Draft Solar PEIS. The conclusion in the
42 Draft Solar PEIS that no Class I areas are within the 100-km (62-mi) distance within which the
43 EPA recommends notification of Federal Land Managers remains valid.
44
45

1 **11.1.13.2 Impacts**

2
3
4 **11.1.13.2.1 Construction**

5
6
7 **Methods and Assumptions**

8
9 Except for the area disturbed at any one time during construction, the methods and
10 modeling assumptions have not changed from those presented in the Draft Solar PEIS. On the
11 basis of the reduced size of the proposed Amargosa Valley SEZ, for this Final Solar PEIS air
12 quality was remodeled by assuming that a maximum of 3,000 acres (12.14 km²) in the southern
13 portion of the proposed SEZ (the area closest to nearby residences) would be disturbed at any
14 one time; the Draft Solar PEIS assumed disturbance of an area three times larger.¹

15
16
17 **Results**

18
19 Potential particulate impacts on air quality from construction were remodeled based on
20 the revised boundaries of the proposed Amargosa Valley SEZ. Changes in magnitude to
21 predicted impacts at the boundary would be expected to be larger than changes at greater
22 distances from the SEZ. Table 11.1.13.2-1 presents the updated maximum modeled
23 concentrations from construction fugitive dust.

24
25 The updated maximums are lower by about 30% than those in the Draft Solar PEIS
26 (as would be expected given the reduction in the area assumed disturbed), but totals, except for
27 annual PM_{2.5}, could still exceed the NAAQS/SAAQS levels. These updated predictions are still
28 consistent with the conclusion in the Draft Solar PEIS that maximum particulate levels in the
29 vicinity of the SEZ could exceed the standard levels used for comparison. These high PM₁₀
30 concentrations would be limited to the immediate areas surrounding the SEZ boundaries and
31 would decrease quickly with distance.

32
33 Other locations modeled include Big Dune, the nearest residences, nearby schools, the
34 truck stop at the intersection of U.S. 95 and State Route 373, and Ash Meadows NWR. The
35 updated analysis conducted for this Final Solar PEIS predicted concentrations at all modeled
36 locations lower than those in the Draft Solar PEIS and showed no locations with predicted
37 concentrations above the NAAQS levels.

38

¹ At this programmatic level, detailed information on construction activities, such as facility size, type of solar technology, heavy equipment fleet, activity level, work schedule, and so on, is not known; thus air quality modeling cannot be conducted. It has been assumed that an area of 3,000 acres (12.14 km²) would be disturbed continuously, so 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.

1 **TABLE 11.1.13.2-1 Maximum Air Quality Impacts from Emissions Associated with Construction**
 2 **Activities for the Proposed Amargosa Valley SEZ as Revised**

Pollutant ^a	Averaging Time	Rank ^b	Concentration ($\mu\text{g}/\text{m}^3$)				Percentage of NAAQS/SAAQS	
			Maximum Increment ^b	Background ^c	Total	NAAQS/SAAQS	Increment	Total
PM ₁₀	24 hour	H6H	340	66	406	150	227	271
	Annual	– ^d	67.5	17	84.5	50	135	169
PM _{2.5}	24 hour	H8H	27.1	12.9	40.0	35	77	114
	Annual	–	6.7	4.9	11.7	15	45	78

- a PM_{2.5} = particulate matter with a diameter of $\leq 2.5 \mu\text{m}$; PM₁₀ = particulate matter with a diameter of $\leq 10 \mu\text{m}$.
- 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 11.1.13.1-2 of the Draft Solar PEIS.
- d A dash indicates not applicable.

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Updated 24-hour and annual PM₁₀ concentration increments at the surrogate receptors² for the nearest Class I area—John Muir WA in California—would be lower than those in the Draft Solar PEIS, but the Class I PSD increment for 24-hour PM₁₀ could still be exceeded. However, the predicted 24-hour PM₁₀ increment in the John Muir WA has been updated from a value exceeding the Class I PSD increment for 24-hour PM₁₀ in the Draft Solar PEIS to a value of about 50% of the increment in this Final Solar PEIS, considering the same decay ratio with distance.

The conclusions in the Draft Solar PEIS remain valid. The predicted 24-hour and annual PM₁₀ and 24-hour PM_{2.5} concentration levels could exceed the standard levels used for comparison at the SEZ boundaries and in the immediately 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 air quality impacts from construction activities are anticipated to be less than the Class I PSD PM₁₀ increments at the nearest federal Class I area. Construction activities are not subject to the PSD program, and the comparison provides only a screen for gauging the size of the

² 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 directions of the nearest Class I area were selected as surrogates for the Prevention of Significant Deterioration (PSD) analysis.

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

3
4 Considering the reduced size of the SEZ, emissions from construction equipment and
5 vehicles would be less than those mentioned in the Draft Solar PEIS. Any potential impacts on
6 air quality-related values (AQRVs) at nearby federal Class I areas would be less; thus the
7 conclusions in the Draft Solar PEIS remain valid. Emissions from construction-related
8 equipment and vehicles are temporary and could cause some unavoidable but short-term impacts.
9

10 ***11.1.13.2.2 Operations***

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12
13 The reduction in the developable area of the proposed Amargosa Valley SEZ by about
14 73% from 31,625 acres (128.0 km²) to 8,479 acres (34.3 km²) reduces the generating capacity
15 and annual power generation by a similar percentage and thus reduces the potentially avoided
16 emissions presented in the Draft Solar PEIS. Total revised power generation capacity ranging
17 from 754 to 1,357 MW is estimated for the revised Amargosa Valley SEZ for various solar
18 technologies (see Section 11.1.1.2). As explained in the Draft Solar PEIS, the estimated amount
19 of emissions avoided for the solar technologies evaluated depends only on the megawatts of
20 conventional fossil fuel-generated power avoided.
21

22 Table 11.1.13.2-2 in the Draft Solar PEIS provided estimates for emissions potentially
23 avoided by a solar facility. These estimates were updated by reducing the tabulated estimates
24 by about 27%, as shown in the revised Table 11.1.13.2-2. For example, for the technologies
25 estimated to require 9 acres/MW (power tower, dish engine, and PV), up to 1,598 tons of NO_x
26 per year (= 26.81% × the low-end value of 5,960 tons per year tabulated in the Draft Solar PEIS)
27 could be avoided by full solar development of the revised area of the proposed Amargosa Valley
28 SEZ. Although the total emissions avoided by full solar development of the proposed SEZ are
29 considerably reduced from those presented in the Draft Solar PEIS, the conclusions of the Draft
30 Solar PEIS remain valid; that is, if the proposed Amargosa Valley SEZ were fully developed, it
31 is expected that the emissions avoided could be substantial. Power generation from fossil fuel-
32 fired power plants accounts for about 93% of the total electric power generated in Nevada, for
33 which the contributions of natural gas and coal combustion are comparable. Thus, solar facilities
34 to be built in the Amargosa Valley SEZ could be more important than those built in other states
35 in terms of avoiding fuel combustion-related emissions.
36
37

38 ***11.1.13.2.3 Decommissioning and Reclamation***

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40 The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation
41 activities would be of short duration, and their potential impacts on air quality would be minor
42 and temporary.
43
44

1 **TABLE 11.1.13.2-2 Annual Emissions from Combustion-Related Power Generation Displaced by**
 2 **Full Solar Development of the Proposed Amargosa Valley SEZ as Revised**

Area Size (acres) ^a	Capacity (MW) ^b	Power Generation (GWh/yr) ^c	Emissions Avoided (tons/yr; 10 ³ tons/yr for CO ₂) ^d			
			SO ₂	NO _x	Hg	CO ₂
8,479	754–1,357	1,320–2,377	1,863–3,353	1,598–2,876	0.011–0.019	1,026–1,846
Percentage of total emissions from electric power systems in the state of Nevada ^e			3.5–6.3%	3.5–6.3%	3.5–6.3%	3.5–6.3%
Percentage of total emissions from all source categories in the state of Nevada ^f			2.8–5.1%	1.1–1.9%	– ^g	1.9–3.4%
Percentage of total emissions from electric power systems in the six-state study area ^e			0.74–1.3%	0.43–0.78%	0.36–0.65%	0.39–0.70%
Percentage of total emissions from all source categories in the six-state study area ^e			0.40–0.71%	0.06–0.11%	–	0.12–0.22%

- a To convert acres to km², multiply by 0.004047.
- b It is assumed that the SEZ would eventually have development on 80% of the lands and that a range of 5 acres (0.020 km²) per MW (for parabolic trough technology) to 9 acres (0.04 km²) per MW (power tower, dish engine, and PV technologies) would be required.
- c Assumed a capacity factor of 20%.
- d Composite combustion-related emission factors for SO₂, NO_x, Hg, and CO₂ of 2.82, 2.42, 1.6 × 10⁻⁵, and 1,553 lb/MWh, respectively, were used for the state of Nevada.
- e Emission data for all air pollutants are for 2005.
- f Emission data for SO₂ and NO_x are for 2002, while those for CO₂ are for 2005.
- g A dash indicates not estimated.

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

3
4
5 **11.1.13.3 SEZ-Specific Design Features and Design Feature Effectiveness**
6

7 Required programmatic design features that would reduce air quality impacts are
8 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Limiting dust generation
9 during construction and operations is a required programmatic design feature under the BLM
10 Solar Energy Program. These extensive fugitive dust control measures would keep off-site PM
11 levels as low as possible during construction.
12

13 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
14 analyses due to changes to the SEZ boundaries, and consideration of comments received as
15 applicable, no SEZ-specific design features to address air quality impacts in the proposed

1 Amargosa Valley SEZ have been identified. Some SEZ-specific design features may be
2 identified through the process of preparing parcels for competitive offer and subsequent
3 project-specific analysis.
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5

6 **11.1.14 Visual Resources**

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9 **11.1.14.1 Affected Environment**

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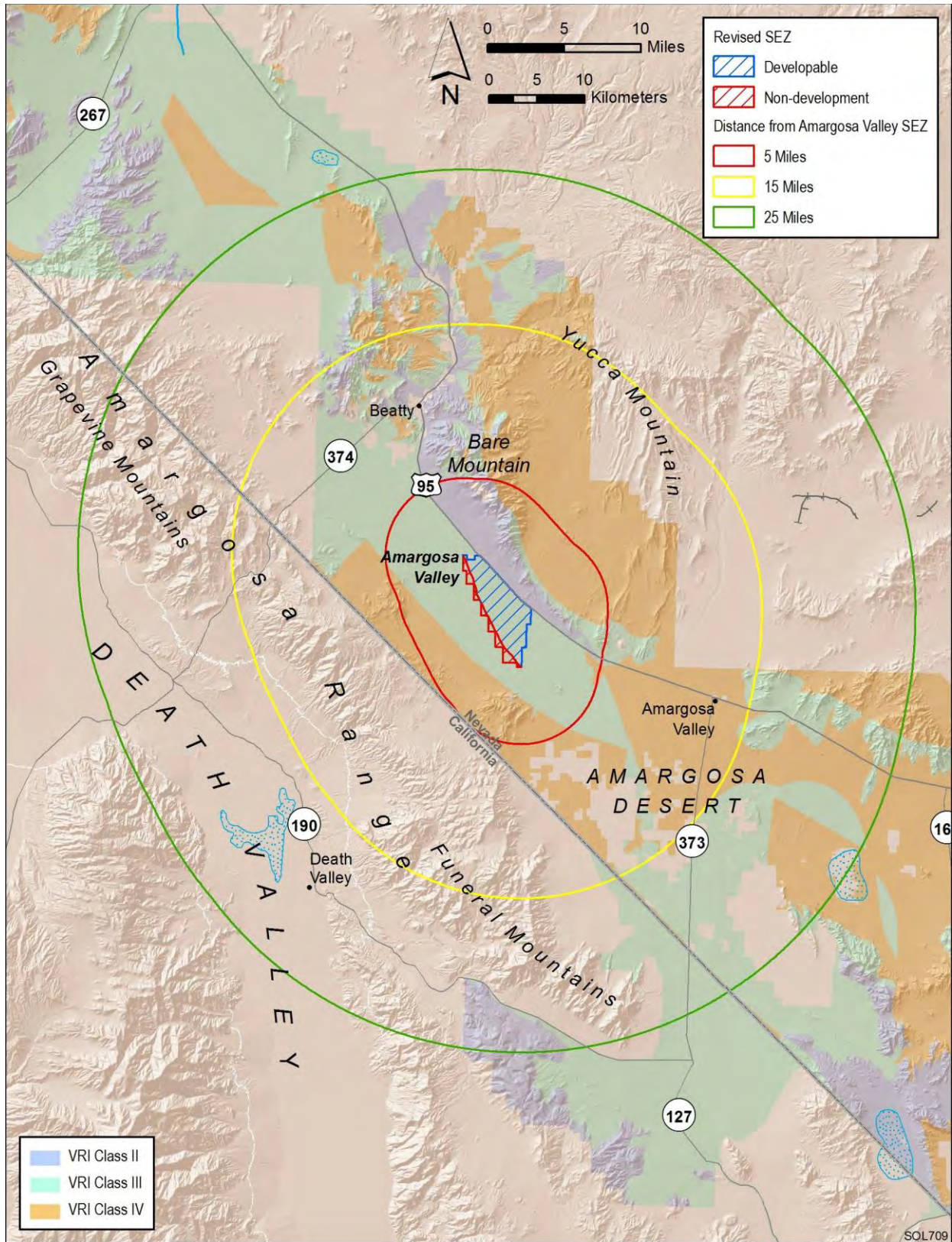
11 The proposed Amargosa Valley SEZ, as revised, extends approximately 3.1 mi (4.8 km)
12 east to west and approximately 7.0 mi (11.3 km) north to south. The SEZ boundaries have been
13 revised to eliminate the area south and west of the Amargosa River floodplain and the area
14 northeast of U.S. 95; U.S. 95 no longer passes through the northeast portion of the SEZ and
15 instead now serves as the northeastern boundary. Areas of the SEZ that were labeled to meet
16 Visual Resource Management (VRM) Class II-consistent management objectives in the Draft
17 Solar PEIS also have been eliminated from the SEZ.
18

19 The boundary changes resulted in the elimination of 21,888 acres (88.6 km²). In addition,
20 1,258 acres (5.1 km²) within the SEZ boundaries have been identified as non-development areas.
21 These areas consist of lands within the Amargosa River floodplain, which were included in the
22 SEZ to facilitate the definition of the SEZ boundaries. As a result, the developable area within
23 the SEZ now includes an area of 8,479 acres (34.3 km²). Because of the reduction in size of the
24 SEZ, the total acreage of the lands visible within the 25-mi (40 km) viewshed of the SEZ has
25 decreased.
26

27 An updated Visual Resources Inventory (VRI) map for the SEZ and surrounding lands is
28 shown in Figure 11.1.14.1-1; it provides information from the BLM 2007 VRI, which was
29 finalized in October 2011 (BLM 2011a). As shown, the updated VRI value for the SEZ is VRI
30 Class III, indicating moderate relative visual values. The updated inventory indicates low scenic
31 quality for the SEZ and its immediate surroundings. Positive scenic quality attributes included
32 moderately rated adjacent scenery. The updated inventory also indicates high sensitivity for the
33 SEZ and its immediate surroundings, based on a moderate level of use and a high level of public
34 interest.
35

36 The 25-mi (40-km), 650-ft (198-m) viewshed contains lands located in the Barstow Field
37 Office, the Battle Mountain District Office, and the Southern Nevada District Office. Lands
38 within this viewshed have the following VRI Class designations:
39

- 40 • Barstow Field Office
 - 41 – 3,160 acres (12.8 km²) of VRI Class I areas, and
 - 42 – 14,822 acres (60.0 km²) of VRI Class IV areas.
 - 43 • Battle Mountain District Office
 - 44 – 3,067 acres (12.4 km²) of VRI Class II areas,
 - 45 – 15,923 acres (64.4 km²) of VRI Class III areas, and
 - 46 – 14,588 acres (59.0 km²) of VRI Class IV areas.
- 47



1

2 **FIGURE 11.1.14.1-1 Visual Resource Inventory Values for the Proposed Amargosa Valley SEZ as**
 3 **Revised**

- Southern Nevada District Office
 - 17,067 acres (69.1 km²) of VRI Class II areas,
 - 108,955 acres (440.9 km²) of VRI Class III areas, and
 - 133,410 acres (539.9 km²) of VRI Class IV areas.

As indicated in the Draft Solar PEIS, the proposed SEZ is managed as VRM Classes III and IV. However, because of the elimination of acreage, the revised Amargosa Valley SEZ now is primarily managed as VRM Class III, with only a small portion in the southwest (near the non-developable lands) as VRM Class IV.

11.1.14.2 Impacts

The reduction in SEZ size would substantially decrease the total visual impacts associated with solar energy development in the SEZ. It would limit the total amount of solar facility infrastructure that would be visible and the geographic extent of the visible infrastructure.

The reduction in size of the proposed Amargosa Valley SEZ in the Supplement to the Draft Solar PEIS eliminates approximately 73% 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 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.

11.1.14.2.1 Impacts on the Proposed Amargosa Valley SEZ

Although the reduction in size of the SEZ discussed in Section 11.1.14.2 would substantially reduce 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.

11.1.14.2.2 Impacts on Lands Surrounding the Proposed Amargosa Valley 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 Appendixes M and N of the Draft Solar PEIS 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

1 energy technologies: PV and parabolic trough arrays, 24.6 ft (7.5 m); solar dishes and power
2 blocks for concentrating solar power (CSP) technologies, 38 ft (11.6 m); transmission towers
3 and short solar power towers, 150 ft (45.7 m); and tall solar power towers, 650 ft (198.1 m).
4

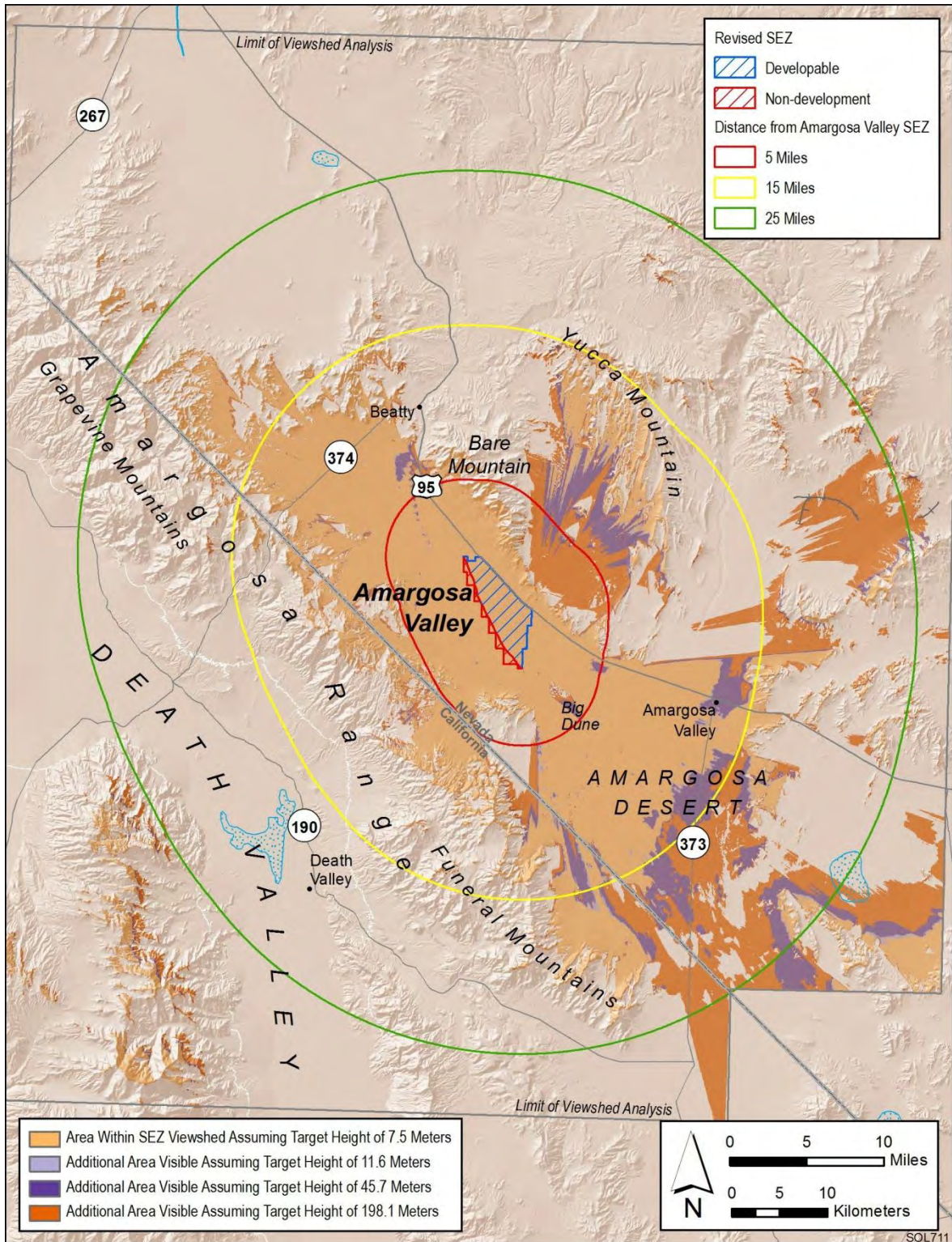
5 These same viewsheds were recalculated in order to account for the boundary changes
6 described in the Supplement to the Draft Solar PEIS. Figure 11.1.14.2-1 shows the combined
7 results of the viewshed analyses for the four viewshed heights. The colored segments indicate
8 areas with clear lines of sight to one or more areas within the SEZ and from which solar facilities
9 within these areas of the SEZ would be expected to be visible, assuming adequate lighting and
10 other atmospheric conditions, and the absence of screening vegetation or structures. The light
11 brown areas are locations from which PV and parabolic trough arrays located in the SEZ could
12 be visible. Solar dishes and power blocks for CSP technologies would be visible from the areas
13 shaded in light brown and the additional areas shaded in light purple. Transmission towers and
14 short solar power towers would be visible from the areas shaded light brown, light purple, and
15 the additional areas shaded in dark purple. Power tower facilities located in the SEZ could be
16 visible from areas shaded light brown, light purple, dark purple, and at least the upper portions
17 of power tower receivers from the additional areas shaded in medium brown.
18
19

20 ***11.1.14.2.3 Impacts on Selected Federal-, State-, and BLM-Designated Sensitive*** 21 ***Visual Resource Areas and Other Lands and Resources*** 22

23 Figure 11.1.14.2-2 shows the results of a geographical information system (GIS) analysis
24 that overlays selected federal, state, and BLM-designated sensitive visual resource areas onto the
25 combined tall solar power tower (650 ft [198.1 m]) and PV and parabolic trough array (24.6 ft
26 [7.5 m]) viewsheds in order to illustrate which of these sensitive visual resource areas would
27 have views of solar facilities within the SEZ and therefore potentially would be subject to visual
28 impacts from those facilities. Distance zones that correspond to BLM's VRM system-specified
29 foreground-middleground distance (5 mi [8 km]), background distance (15 mi [24.1 km]), and a
30 25-mi (40.2-km) distance zone are shown as well in order to indicate the effect of distance from
31 the SEZ on impact levels, which are highly dependent on distance. A similar analysis was
32 conducted for the Draft Solar PEIS.
33

34 The scenic resources included in the analysis were as follows:
35

- 36 • National Parks, National Monuments, National Recreation Areas, National
37 Preserves, National Wildlife Refuges, National Reserves, National
38 Conservation Areas, National Historic Sites;
- 39 • Congressionally authorized Wilderness Areas;
- 40 • Wilderness Study Areas;
- 41 • National Wild and Scenic Rivers;
- 42 • National Wild and Scenic Rivers;
- 43 • National Wild and Scenic Rivers;
- 44 • National Wild and Scenic Rivers;
- 45 • National Wild and Scenic Rivers;
- 46 • Congressionally authorized Wild and Scenic Study Rivers;



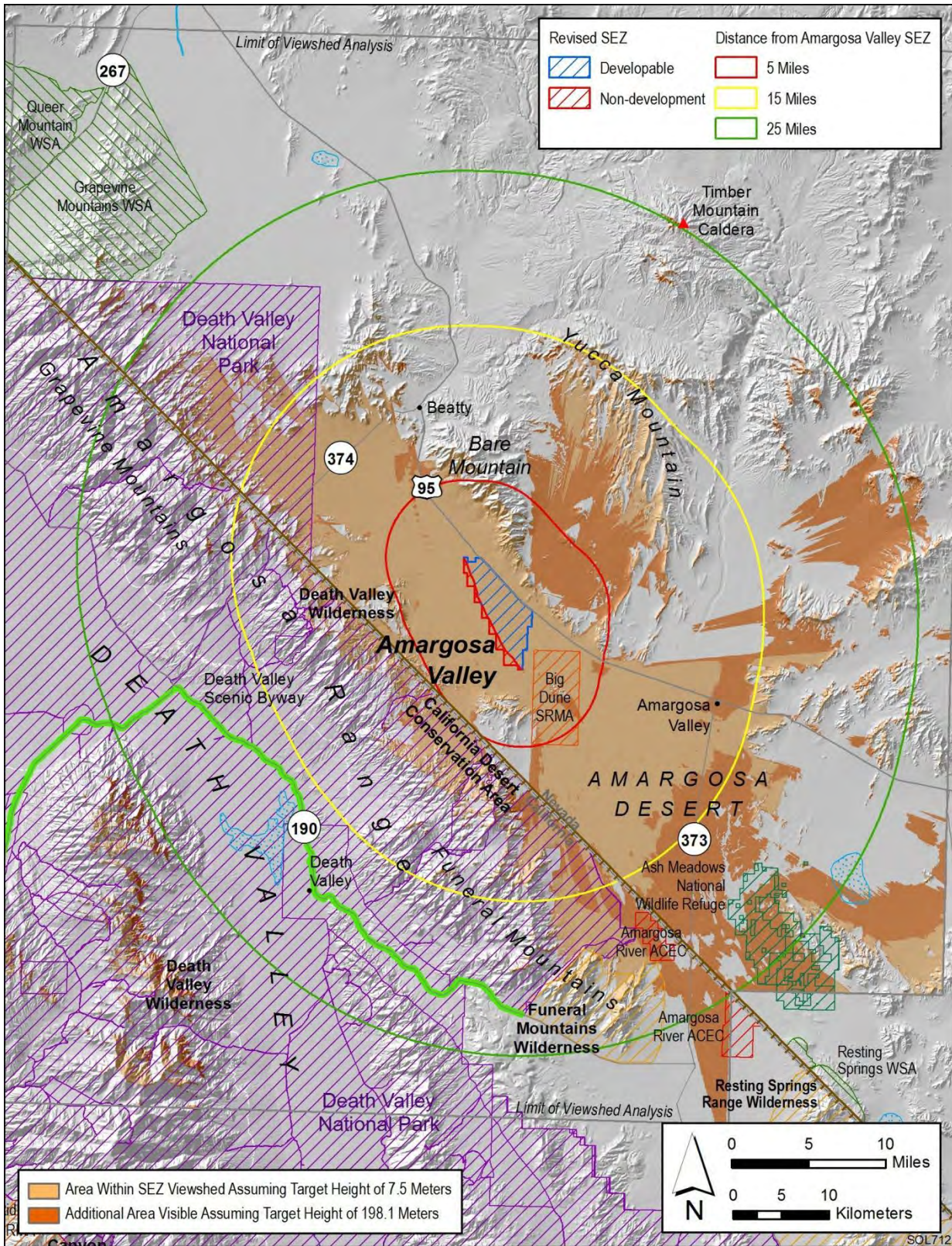
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2 **FIGURE 11.1.14.2-1 Viewshed Analyses for the Proposed Amargosa Valley SEZ as Revised**

3 **and Surrounding Lands, Assuming Viewshed Heights of 24.6 ft (7.5 m), 38 ft (11.6 m), 150 ft**

4 **(45.7 m), and 650 ft (198.1 m) (shaded areas indicate lands from which solar development**

5 **and/or associated structures within the SEZ could be visible)**



1
 2 **FIGURE 11.1.14.2-2 Overlay of Selected Sensitive Visual Resource Areas onto Combined 650-ft**
 3 **(198.1-m) and 24.6-ft (7.5-m) Viewsheds for the Proposed Amargosa Valley SEZ as Revised**

- 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.

The results of the GIS analyses are summarized in Table 11.1.14.2-1. The change in size of the SEZ alters the viewshed of the SEZ, such that the visibility of the SEZ and solar facilities within the SEZ from the surrounding lands would be reduced.

TABLE 11.1.14.2-1 Selected Potentially Affected Sensitive Visual Resources within a 25-mi (40-km) Viewshed of the Proposed Amargosa Valley SEZ as Revised, Assuming a Target Height of 650 ft (198.1 m)

Feature Type	Feature Name/ Linear Distance (Total Acreage ^a)	Feature Area or Linear Distance ^b		
		Visible within 5 mi	Visible Between	
			5 and 15 mi	15 and 25 mi
National Park	Death Valley (3,397,062 acres)	0 acres (0%)	58,953 acres (2%)	29,504 acres (1%)
WAs	Death Valley (3,074,256 acres)	0 acres (0%)	40,892 acres (1%)	13,900 acres (0%)
	Funeral Mountains (27,567 acres)	0 acres (0%)	0 acres (0%)	3,675 acres (13%)
Wildlife Refuge	Ash Meadows (24,193 acres)	0 acres (0%)	0 acres (0%)	8,896 acres (37%)
SRMA	Big Dune (11,572 acres)	10,230 acres (88%)	858 acres (7%)	0 acres (0%)
ACEC	Amargosa River (27,797 acres)	0 acres (0%)	0 acres (0%)	2,254 acres (8%)
National Conservation Area	California Desert (25,919,319 acres)	0 acres (0%)	44,903 acres (0%)	31,191 acres (0%)

^a To convert acres to km², multiply by 0.004047.

^b Percentage of total feature acreage or road length viewable.

1 With the reduction in size of the SEZ, solar energy development within the SEZ would be
2 expected to create minimal or weak visual contrasts for viewers within three of the seven
3 surrounding scenic resource areas and other resources listed in Table 11.1.14.2-1. Moderate or
4 strong visual contrasts still would occur in the Death Valley NP and WA, Big Dune SRMA, and
5 the California Desert National Conservation Area (CDNCA).
6

7 In addition to these areas, impacts on other lands and resource areas also were evaluated.
8 These areas include U.S. 95, State Route 374, and State Route 373.
9

10 ***11.1.14.2.4 Summary of Visual Resource Impacts for the Proposed Amargosa*** 11 ***Valley SEZ*** 12

13
14 The visual contrast analysis in the Draft Solar PEIS determined that because there could
15 be multiple solar facilities within the Amargosa Valley SEZ and a range of supporting facilities
16 required, solar development within the SEZ would make it essentially industrial in appearance
17 and would contrast strongly with the surrounding mostly natural-appearing landscape.
18

19 The reduction in size of the SEZ would decrease the visual contrast associated with solar
20 facilities as seen both within the SEZ and from surrounding lands in both daytime and nighttime
21 views. The reductions in visual contrast can be summarized as follows:
22

- 23 • Within the Amargosa Valley SEZ: Contrasts experienced by viewers in the
24 area south and west of the Amargosa River floodplain and the area northeast
25 of U.S. 95 would be reduced because of the elimination of 21,888 acres
26 (88.6 km²) of land within these areas of the SEZ. A small reduction in
27 contrasts also would occur within 1,258 acres (5.1 km²) that were identified
28 within the Amargosa River floodplain due to their designation as
29 non-development lands. Strong contrasts, however, still would result in the
30 remaining developable areas of the SEZ.
31
- 32 • Death Valley NP: A reduction in contrasts would be anticipated due to the
33 revision of the SEZ. The SEZ, as it was originally proposed in the Draft Solar
34 PEIS, was located within 1 mi (1.6 km) of the National Park. Viewers within
35 the National Park would have open views of the SEZ, especially from
36 elevated viewpoints. At the point of closest approach, Death Valley NP now is
37 just more than 5 mi (8 km) from the southwest border of the SEZ. Because of
38 the proximity of the National Park to the SEZ and the potential for views from
39 elevated viewpoints, solar development within the SEZ still would cause weak
40 to strong contrasts, depending on viewer location within the National Park.
41
- 42 • Death Valley WA: See above for Death Valley NP.
43
- 44 • Funeral Mountains WA: A reduction in contrasts would be anticipated due to
45 the elimination of acreage within the southern portion of the SEZ. Expected
46 contrast levels would be lowered from “weak” to “minimal to weak.”

- 1 • Ash Meadows NWR: A reduction in contrasts would be anticipated due to the
2 revision of the SEZ; expected contrast levels would be lowered from “weak” to
3 “minimal to weak.”
4
- 5 • Big Dune SRMA: A reduction in contrasts would be anticipated due to the
6 elimination of approximately 73% of the SEZ. However, because of the
7 proximity of the SEZ and the presence of some relatively open views, solar
8 development within the SEZ still would cause strong contrasts. Contrast
9 would be slightly weaker from viewpoints in the southeastern portion of the
10 SRMA.
11
- 12 • Amargosa River ACEC: A reduction in contrasts would be anticipated due to
13 the revision of the SEZ. The amount of acreage within the 25-mi (40-km)
14 viewshed decreased by 665 acres (2.7 km²); however, solar development
15 within the SEZ still would cause minimal contrasts.
16
- 17 • CDNCA: A reduction in contrasts would be anticipated, especially in those
18 areas that were located within 5 mi (8 km) of the SEZ, as it was originally
19 proposed in the Draft Solar PEIS. The CDNCA now is located slightly more
20 than 5 mi (8 km) from the SEZ at the point of closest approach. Solar
21 development within the SEZ, however, still would cause weak to strong
22 contrasts, depending on viewer location within the CDNCA.
23
- 24 • U.S. 95: A reduction in contrasts would be anticipated due to the elimination
25 of acreage on the northeast side of U.S. 95. The highway now serves as the
26 boundary of the SEZ, rather than passing through it. The strongest contrast
27 would be seen by viewers traveling along the highway in those portions that
28 serve as the SEZ boundary. Because of the close proximity, solar development
29 within the SEZ still would cause strong contrasts.
30
- 31 • State Route 374: A reduction in contrasts would be anticipated because of the
32 revision of the SEZ, which eliminated some of the northwest portions of the
33 SEZ. Solar development, however, within the SEZ still would cause weak to
34 moderate contrasts, depending on viewer location on State Route 374.
35
- 36 • State Route 373: A reduction in contrasts would be anticipated because of the
37 elimination of acreage in the southeast portion of the SEZ; expected contrast
38 levels would be lowered from “minimal to weak” to “minimal.”
39
40

41 **11.1.14.3 SEZ-Specific Design Features and Design Feature Effectiveness**

42
43 Required programmatic design features that would reduce impacts on visual resources
44 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. While application of the
45 programmatic design features will reduce potential visual impacts somewhat, the degree of
46 effectiveness of these design features could be assessed only at the site- and project-specific

1 level. Given the large scale, reflective surfaces, and strong regular geometry of utility-scale solar
2 energy facilities and the lack of screening vegetation and landforms within the SEZ viewshed,
3 siting the facilities away from sensitive visual resource areas and other sensitive viewing areas
4 would be the primary means of mitigating visual impacts. The effectiveness of other visual
5 impact mitigation measures generally would be limited.
6

7 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
8 analyses due to changes to the SEZ boundaries, and consideration of comments received as
9 applicable, no SEZ-specific design features for visual resources have been identified in this
10 Final Solar PEIS. Some SEZ-specific design features may be identified through the process of
11 preparing parcels for competitive offer and subsequent project-specific analysis.
12

13 **11.1.15 Acoustic Environment**

14 **11.1.15.1 Affected Environment**

15
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17
18
19 The developable area of the proposed Amargosa Valley SEZ was reduced by about 73%
20 from 31,625 acres (128.0 km²) to 8,479 acres (34.3 km²); the southern and western boundaries
21 were moved inward about 1.5 mi (2.4 km) and 1.2 to 5.0 mi (1.9 to 8.0 km), respectively; and the
22 area north of U.S. 95 was removed. These reductions increased the distances to some of the
23 sensitive receptors at which noise was modeled for the Draft Solar PEIS. In particular, the
24 nearest residences to the south and Death Valley NP to the southwest are now farther from the
25 proposed SEZ boundary than was assumed in the Draft Solar PEIS. Consequently, noise levels at
26 these receptors will be lower than those predicted in the Draft Solar PEIS.
27

28 Comments provided by the DoD on the Supplement to the Draft Solar PEIS noted that
29 several approved, highly utilized MTRs exist in airspace directly above the SEZ. Existing noise
30 levels at the SEZ include periodic loud routine military flight operations occurring in MTRs
31 located directly above and proximate to the SEZ.
32

33 **11.1.15.2 Impacts**

34 ***11.1.15.2.1 Construction***

35
36
37
38
39 Except for the area disturbed at any one time during construction, the methods and
40 modeling assumptions have not changed from those presented in the Draft Solar PEIS. On the
41 basis of the boundary changes and reduced size of the proposed Amargosa Valley SEZ, noise
42 impacts for this Final Solar PEIS were remodeled assuming that 3,000 acres (12.14 km²) in the
43 southern portion of the proposed SEZ (the area closest to the nearest residences) would be
44 disturbed at any one time. The updated noise predictions are less than those in the Draft Solar
45 PEIS, and, except as noted below for wildlife impact in specially designated areas, the
46 conclusions presented in the Draft Solar PEIS remain valid.

1 With the revised SEZ boundaries, estimated construction noise levels at the nearest
2 residence (about 5.9 mi [9.5 km] south of the SEZ) would be about 22 dBA, which is well below
3 a typical daytime mean rural background level of 40 dBA. In addition, an estimated 40 dBA L_{dn}
4 at this residence (i.e., no contribution from construction activities) is well below the EPA
5 guidance of 55 dBA L_{dn} for residential areas.
6

7 On the basis of comments received and recent references as applicable, this Final Solar
8 PEIS used an approximate significance threshold of 55 dBA corresponding to the onset of
9 adverse physiological impacts (Barber et al. 2010) to update the analysis of potential noise
10 impacts on terrestrial wildlife in areas of special concern. Noise levels were updated for two of
11 three specially designated areas within 5 mi (8.0 km) of the proposed Amargosa Valley SEZ.
12 The updated distance between the revised SEZ boundaries and Death Valley NP is greater than
13 that in the Draft Solar PEIS, and predicted noise levels at the National Park's boundary are lower
14 (25 dBA). The distance to Big Dune ACEC is unchanged by the revised boundaries; thus the
15 predicted noise level will be the same as in the Draft Solar PEIS (36 dBA). Both these levels are
16 below the 55 dBA approximate significance threshold and the typical daytime mean rural
17 background level of 40 dBA. The third specially designated area, Big Dune SRMA, which
18 includes Big Dune ACEC, was established to provide a management framework primarily for
19 OHV use, and noise is not likely to be a concern at the Big Dune SRMA. As concluded in the
20 Draft Solar PEIS, construction noise in the proposed SEZ is not likely to be a significant concern
21 for the three nearby specially designated areas. However, as discussed in Section 5.10.2 of the
22 Draft Solar PEIS and this Final Solar PEIS, there is the potential for other effects on terrestrial
23 wildlife (e.g., startle or masking) to occur at lower noise levels (Barber et al. 2011). Considering
24 the approximate significance threshold of 55 dBA and the potential for impacts at lower noise
25 levels, impacts on terrestrial wildlife from construction noise would have to be considered on a
26 site-specific basis. However, even considering potential impacts at lower noise levels,
27 construction noise from the SEZ would not be anticipated to affect wildlife in the nearby
28 specially designated areas.
29

30 Construction noise and vibration impacts would be the same or less than those presented
31 in the Draft Solar PEIS, and the conclusions of the Draft Solar PEIS remain valid. Construction
32 would cause minimal, unavoidable, but localized, short-term noise impacts on neighboring
33 communities, even when construction activities occur close to the nearest residence. No adverse
34 vibration impacts are anticipated from construction activities, including pile driving for dish
35 engines.
36

37 38 ***11.1.15.2.2 Operations*** 39

40 Due to boundary changes and identification of non-development areas for the proposed
41 Amargosa Valley SEZ, noise impacts for this Final Solar PEIS were remodeled.
42
43

1 **Parabolic Trough and Power Tower**
2

3 If thermal energy storage (TES) were not used (12 hours of daytime operations only), the
4 predicted noise level at the nearest residence about 5.9 mi (9.5 km) away would be well below
5 the typical daytime mean rural background of 40 dBA and the EPA guideline level of 55 dBA
6 L_{dn} for residential areas. However, if TES were used, on a calm, clear night, typical of the
7 proposed Amargosa Valley SEZ, strong temperature inversions could focus sound downward,
8 and the nighttime noise level would be higher than the typical nighttime mean rural background
9 level of 30 dBA. The 55-dBA EPA guideline would still not be exceeded. The conclusion in the
10 Draft Solar PEIS that operating parabolic trough or power tower facilities using TES and located
11 near the southern SEZ boundary could result in minor adverse noise impacts on the nearest
12 residence, depending on background noise levels and meteorological conditions, remains valid.
13

14 As stated above under construction impacts, for this Final Solar PEIS, an approximate
15 significance threshold of 55 dBA was used to evaluate potential noise impacts on terrestrial
16 wildlife in areas of special concern. With TES, estimated daytime/nighttime noise levels from
17 operation of a parabolic trough or power tower solar facility near the southern boundary of the
18 proposed Amargosa Valley SEZ could produce noise levels of 29/39 dBA and 37/47 dBA at the
19 boundaries of Death Valley NP and Big Dune ACEC, respectively. These levels are below the
20 significance threshold; thus the conclusion in the Draft Solar PEIS that adverse impacts on
21 wildlife in the specially designated areas are unlikely remains valid. However, as discussed in
22 Section 5.10.2, there is the potential for other effects (e.g., startle or masking) to occur at lower
23 noise levels (Barber et al. 2011). Because of these impacts and the potential for impacts at lower
24 noise levels, consideration of impacts on terrestrial wildlife from construction noise would have
25 to be conducted on a site-specific basis. For potential impacts at lower noise levels, noise from a
26 parabolic trough or power tower facility with TES could cause minor impacts on wildlife in the
27 nearby specially designated areas. These noise levels could be audible and affect soundscapes
28 in Death Valley NP.
29
30

31 **Dish Engines**
32

33 The reduced size of the proposed Amargosa Valley SEZ would decrease the maximum
34 potential number of 25-kW dish engines to 30,148. The estimated noise level at the nearest
35 residence about 5.9 mi (9.5 km) away would be about 35 dBA, lower than the typical daytime
36 mean rural background level of 40 dBA and, for 12 hours of operation, about 41 dBA L_{dn} , well
37 below the EPA guideline of 55 dBA L_{dn} for residential areas. The conclusion of the Draft Solar
38 PEIS that noise from dish engines could cause minor adverse impacts on the nearest residence,
39 depending on background noise levels and meteorological conditions, remains valid.
40

41 As stated above under construction impacts, for this Final Solar PEIS an approximate
42 significance threshold of 55 dBA was used to evaluate potential noise impacts on terrestrial
43 wildlife in areas of special concern. Estimated noise levels from operation of a dish engine solar
44 facility, for which dish engines are placed all over the SEZ, could produce noise levels of 38 and
45 44 dBA at the boundaries of Death Valley NP and Big Dune ACEC, respectively. These levels
46 are below the significance threshold; thus the conclusion in the Draft Solar PEIS that adverse

1 impacts on wildlife in the specially designated areas are unlikely remains valid. However, as
2 discussed in Section 5.10.2, there is the potential for other effects (e.g., startle or masking) to
3 occur at lower noise levels (Barber et al. 2011). Because of these impacts and the potential for
4 impacts at lower noise levels, impacts on terrestrial wildlife from construction noise would have
5 to be considered on a site-specific basis. For potential impacts at lower noise levels, noise from a
6 dish engine facility could cause minor impacts on wildlife in the nearby specially designated
7 areas. These noise levels could be audible and affect soundscapes in Death Valley NP.
8

9 Changes in the boundaries of the proposed Amargosa Valley SEZ would not affect the
10 discussions of vibration, transformer and switchyard noise, and transmission line corona
11 discharge presented in the Draft Solar PEIS. Noise impacts from these sources would be minimal
12 to negligible.
13

14 **11.1.15.2.3 Decommissioning and Reclamation**

15
16
17 The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation
18 activities would be of short duration, and their potential noise impacts would be minor and
19 temporary. Potential noise and vibration impacts on surrounding communities would be
20 correspondingly less than those for construction activities.
21

22 **11.1.15.3 SEZ-Specific Design Features and Design Feature Effectiveness**

23
24
25 Required programmatic design features that would reduce noise impacts are described in
26 Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design
27 features will provide some protection from noise impacts.
28

29 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
30 analyses due to changes in the SEZ boundaries, and consideration of comments received as
31 applicable, no SEZ-specific design features for noise impacts in the proposed Amargosa Valley
32 SEZ have been identified. Some SEZ-specific design features may be identified through the
33 process of preparing parcels for competitive offer and subsequent project-specific analysis.
34

35 **11.1.16 Paleontological Resources**

36 **11.1.16.1 Affected Environment**

37
38
39 Data provided in the Draft Solar PEIS remain valid, with the following updates:
40

- 41 • The residual deposits located on the southern edge and southwest corner of the
42 SEZ are no longer in the SEZ.
43
44
45

- 1 • The BLM Regional Paleontologist may have additional information regarding
2 the paleontological potential of the SEZ and be able to update the temporary
3 assignment of Potential Fossil Yield Classification (PFYC) Class 2 as used in
4 the Draft Solar PEIS.
5

6 7 **11.1.16.2 Impacts** 8

9 The assessment provided in the Draft Solar PEIS remains valid. Few, if any, impacts on
10 significant paleontological resources are likely to occur in the proposed Amargosa Valley SEZ.
11 However, a more detailed look at the geological deposits of the SEZ is needed to determine
12 whether a paleontological survey is warranted.
13

14 15 **11.1.16.3 SEZ-Specific Design Features and Design Feature Effectiveness** 16

17 Required programmatic design features that would reduce impacts on paleontological
18 resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Impacts would
19 be minimized through the implementation of required programmatic design features, including a
20 stop-work stipulation in the event that paleontological resources are encountered during
21 construction, as described in Section A.2.2 of Appendix A.
22

23 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
24 analyses based on changes to the SEZ boundaries, and consideration of comments received as
25 applicable, no SEZ-specific design features for paleontological resources have been identified. If
26 the geologic deposits in the proposed Amargosa Valley SEZ are determined to be thick alluvial
27 deposits as described in Section 11.1.16.1 of the Draft Solar PEIS and are classified as PFYC
28 Class 2, mitigation of paleontological resources within the SEZ is not likely to be necessary. The
29 need for and nature of any SEZ-specific design features for the remaining portion of the SEZ
30 would depend on the results of future paleontological investigations. Some SEZ-specific design
31 features may be identified through the process of preparing parcels for competitive offer and
32 subsequent project-specific analysis.
33

34 As additional information on paleontological resources (e.g., from regional
35 paleontologists or from new surveys) becomes available, the BLM will post the data to the
36 project Web site (<http://solareis.anl.gov>) for use by applicants, the BLM, and other stakeholders.
37
38

39 **11.1.17 Cultural Resources** 40

41 42 **11.1.17.1 Affected Environment** 43

44 Data provided in the Draft Solar PEIS remain valid, with the following updates:
45

- 1 • The percentage of area that has been surveyed (142 acres [0.6 km²]) in the
2 proposed Amargosa Valley SEZ has been reduced from 3% to 1.6%.
3
- 4 • The number of archaeological sites located in the SEZ has been reduced from
5 four to one. The one remaining site, a railroad siding, has been determined to
6 be not eligible for listing in the *National Register of Historic Places* (NRHP).
7
- 8 • The distance from the SEZ boundary to the Keane Wonder Mine has
9 increased from 8 mi (13 km) to 12 mi (19 km).
10
- 11 • The distance from the SEZ boundary to Death Valley NP has been increased
12 from 1 mi (1.6 km) to 5 mi (8 km).
13
- 14 • A tribally approved ethnographic study of the proposed Amargosa Valley SEZ
15 study area was conducted (SWCA and University of Arizona 2011), and a
16 summary of that study was presented in the Supplement to the Draft Solar
17 PEIS. Several areas of flaked stone were noted, and a number of new cultural
18 landscapes, important water sources, geological features, and traditional plants
19 and animals were identified. (See Section 11.1.18 for a description of the
20 latter.) The completed ethnographic study is available in its entirety on the
21 Solar PEIS Web site (<http://solareis.anl.gov>).
22
- 23 • Big Dune and Eagle Mountain are important geologic features that figure
24 into the traditional stories and songs of the Pahrump Paiute and Timbisha
25 Shoshone Tribes.
26
- 27 • For the Southern Paiute, the Salt Song Trail and associated ceremonial areas
28 pass through or are in the vicinity of the SEZ.
29
- 30 • The Amargosa River is one of the most culturally important features in or near
31 the proposed Amargosa Valley SEZ, and Black Mountain, north of the SEZ, is
32 the source of the river and a powerful ceremonial volcanic mountain.
33
- 34 • Naturally shaped volcanic stones with circular depressions were identified by
35 Tribal members on the valley floor. These stones are believed to have once
36 been used as prayer shrines for individuals travelling through the area.
37
- 38 • Tribal members believe that the prehistoric artifacts in the SEZ were left there
39 intentionally as part of prayer rituals and should be left alone.
40
- 41 • Additional information may be available to characterize the area surrounding
42 the proposed SEZ in the future (after the Final Solar PEIS is completed), as
43 follows:
44 – Results of a Class I literature file search to better understand (1) the site
45 distribution pattern in the vicinity of the SEZ, (2) trail networks through

1 existing ethnographic reports, and (3) overall cultural sensitivity of the
2 landscape.

- 3 - Results of a Class II stratified random sample survey of 424 acres
4 (1.7 km²) or roughly 5% of the SEZ. The Class II survey is being
5 conducted by the BLM to meet its ongoing Section 110 responsibilities
6 under the National Historic Preservation Act (NHPA). The objectives of
7 the Class II surveys currently under contract are to reliably predict the
8 density, diversity, and distribution of archaeological sites within each SEZ
9 in Arizona, California, and Nevada and to create sensitivity zones based
10 on projected site density, complexity, likely presence of human burials,
11 and/or other tribal concerns. The BLM will continue to request funding to
12 support additional Class II sample inventories in the SEZ areas. Areas of
13 interest, such as dune areas and along washes, as determined through a
14 Class I review, and, if appropriate, some subsurface testing of dune and/or
15 colluvium areas should be considered in sampling strategies of future
16 surveys.
- 17 - Continuation of government-to-government consultation as described in
18 Section 2.4.3 of the Supplement to the Draft Solar PEIS and Instruction
19 Memorandum (IM) 2012-032 (BLM 2011b), including follow-up to recent
20 ethnographic studies covering some SEZs in Nevada and Utah with tribes
21 not included in the original studies to determine whether those tribes have
22 similar concerns.

23 24 25 **11.1.17.2 Impacts**

26
27 As stated in the Draft Solar PEIS, direct impacts on significant cultural resources could
28 occur in the proposed Amargosa Valley SEZ; however, further investigation is needed. The
29 following updates are based on the revised boundaries of the SEZ:

- 30
31 • One known non-NRHP eligible site would potentially be affected within the
32 reduced footprint of the SEZ, as well as the flaked stone sites identified by
33 Tribal members.
- 34
35 • Impacts on the Salt Song and Southern Fox Trails are possible.
- 36
37 • Volcanic stone prayer shrines on the valley floor could be affected by solar
38 energy development.

39 40 41 **11.1.17.3 SEZ-Specific Design Features and Design Feature Effectiveness**

42
43 Required programmatic design features that would reduce impacts on cultural resources
44 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Programmatic design
45 features assume that the necessary surveys, evaluations, and consultations will occur.

1 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
2 analyses based on changes to the SEZ boundaries, and consideration of comments received as
3 applicable, no SEZ-specific design features for cultural resources have been identified. SEZ-
4 specific design features would be determined in consultation with the Nevada State Historic
5 Preservation Office (SHPO) and affected tribes and would depend on the results of future
6 investigations. Information in the ethnographic reports would suggest that impacts on the
7 Amargosa River, the Salt Song and Southern Fox Trails, and culturally sensitive plant and
8 animal species would need to be avoided, minimized, or otherwise mitigated if solar energy
9 development were to be initiated in the proposed Amargosa Valley SEZ. Some SEZ-specific
10 design features may be identified through the process of preparing parcels for competitive offer
11 and subsequent project-specific analysis.

14 **11.1.18 Native American Concerns**

17 **11.1.18.1 Affected Environment**

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

- 19 • A tribally approved ethnographic study of the proposed Amargosa Valley SEZ
20 study area was conducted (SWCA and University of Arizona 2011), and a
21 summary of that study was presented in the Supplement to the Draft Solar
22 PEIS. Several areas of flaked stone were noted, and a number of new cultural
23 landscapes, important water sources, geological features, and traditional plants
24 and animals were identified. The completed ethnographic study is available in
25 its entirety on the Solar PEIS Web site (<http://solareis.anl.gov>).
26
- 27 • The tribal representatives from both the Pahrump Paiute Tribe and the
28 Timbisha Shoshone Tribe believe that all the cultural resources and
29 landscapes within the Amargosa SEZ are important in helping both tribes
30 to understand their past, present, and future.
31
- 32 • The Paiute are concerned with the effects on their cultural and spiritual
33 lifeways of harnessing and distributing the sun's energy.
34
- 35 • The tribal representatives of both the Pahrump Paiute Tribe and the Timbisha
36 Shoshone Tribe believe that the Amargosa Valley is a sacred space that
37 should be managed as a spiritual cultural landscape and would like to see
38 the areas significant to each tribe (e.g., Big Dune, Eagle Mountain, and
39 Mount Charleston) nominated as traditional cultural properties.
40
- 41 • Big Dune has been identified by both tribes as an important landscape feature,
42 a geologic anomaly known as a "singing dune." To the Paiute, it acts as a
43 geographic marker to travelers and as a boundary and guide for spirits
44 travelling to the afterlife along the Salt Song Trail.
45
46

- 1 • Eagle Mountain, located southeast of the SEZ, is important in both tribes’
2 spiritual beliefs. It is the origin place of the Western Shoshone and a stop
3 along the Salt Song Trail for the Southern Paiute.
4
- 5 • Mount Charleston, located southeast of the proposed SEZ in the Spring
6 Mountains, has been identified as a creation place for the Southern Paiute.
7
- 8 • The Amargosa River and its origin point, Black Mountain, have been
9 identified by tribal representatives of both groups as extremely important
10 features. The mountain possesses *Puha* (power). As the river flows from the
11 mountain, it carries *Puha* over the landscape, connecting other landscapes,
12 elements, and people. Black Mountain is linked to ceremonial pilgrimages by
13 both Shoshone and Paiute medicine people. In order to get to Black Mountain,
14 a system of trails was followed, passing important ritual areas. In addition,
15 Black Mountain contains a series of spiritual trails traveled by supernatural
16 beings.
17
- 18 • The proposed Amargosa Valley SEZ is located on the path of the annual
19 Shoshone spiritual run, *Mavaa Mia*. During these runs, the Shoshone
20 communicate with the landscape, and it is important that they have
21 unobstructed views to do so.
22
- 23 • Geological features identified by tribal representatives as possessing
24 importance in stories, songs, ceremonies, and Native American lifeways
25 include Devils Hole, Fortymile Canyon, Bare Mountain, Spring Mountains,
26 and Ash Meadows.
27
- 28 • Two “Regions of Refuge” were identified during the ethnographic study: the
29 Black Mountain area and the Spring Mountains. As Europeans encroached on
30 Shoshone and Paiute traditional lands, the tribes retreated to these resource-
31 rich areas.
32
- 33 • Both tribes have identified a number of historical events that occurred in
34 the valley that contribute to the history of their tribes. These include the
35 disruption of irrigation agriculture during European contact and the further
36 disruption of lifeways from the California Gold Rush and the influx of
37 “Forty-niners,” other mining activities, the establishment of mining and
38 ranching communities, and the development of railroads and highways.
39 Native Americans continued to live in the area surrounding the Amargosa
40 Valley during these activities and eventually assimilated into European
41 communities, working in mining camps and on the railroad.
42
- 43 • The Pahrump Paiute representatives maintain that all geological features,
44 artifacts, and archaeological sites have been purposely placed in their present
45 locations and purposely revealed for present and future generations.
46

- 1 • The following traditional plants have been identified in addition to those listed
2 in Table 11.1.18.1-2 of the Draft Solar PEIS: big sagebrush (*Artemisia*
3 *tridentata*), blackbrush (*Coleogyne ramosissima*), brittlebush (*Encelia*
4 *farinose*), desert prince's plume/Indian spinach (*Stanleya pinnata*), desert
5 saltbush (*Atriplex polycarpa*), desert trumpet (*Eriogonum inflatum*), spiny
6 chorizanthe (*Chorizanthe rigida*), shadscale (*Atriplex confertifolia*), and white
7 bursage (*Ambrosia dumosa*).
8
- 9 • The following traditional animals have been identified in addition to those
10 listed in Table 11.1.18.1-3 of the Draft Solar PEIS: jackrabbit (*Lepus* sp.),
11 mountain lion (*Puma concolor*), American kestrel (*Falco sparverius*), horned
12 lark (*Eremophila alpestris*), killdeer (*Charadrius vociferous*), loggerhead
13 strike (*Lanius ludovicianus*), red-tailed hawk (*Buteo jamaicensis*), rock wren
14 (*Salpinctes obsoletus*), Say's pheobe (*Sayornis saya*), turkey vulture
15 (*Cathartes aura*), and western kingbird (*Tyrannus verticalis*).
16
17

18 **11.1.18.2 Impacts**

19

20 The description of potential concerns provided in the Draft Solar PEIS remains valid.
21 During past project-related consultation, the Western Shoshone, Southern Paiute, and Owens
22 Valley Paiute have expressed concerns over project impacts on a variety of resources. While no
23 comments specific to the Amargosa Valley SEZ have been received from Native American tribes
24 to date, the Big Pine Valley Tribe of the Owens Valley has commented on the scope of this
25 PEIS. The tribe recommends that the BLM preserve undisturbed lands intact and that recently
26 disturbed lands, such as abandoned farm fields, railyards, mines, and airfields, be given primary
27 consideration for solar energy development. Potential impacts on existing water supplies were
28 also a primary concern (Moose 2009). The construction of utility-scale solar energy facilities
29 within the proposed SEZ would result in the destruction of some plants important to Native
30 Americans and the habitat of some traditionally important animals.
31

32 In addition to the impacts discussed in the Draft Solar PEIS, the ethnographic study
33 conducted for the proposed Amargosa Valley SEZ identified the following impacts:
34

- 35 • Development within the proposed Amargosa Valley SEZ could result in
36 visual impacts on Big Dune, Eagle Mountain, Black Mountain, Devils Hole,
37 Fortymile Canyon, Bare Mountain, the Spring Mountains, Ash Meadows, and
38 other culturally important and prominent geological features.
39
- 40 • Development within the proposed Amargosa Valley SEZ will have a direct
41 impact on *Mavaa Mia*, the annual Shoshone spiritual run.
42
- 43 • Development within the proposed Amargosa Valley SEZ may affect the
44 spiritual connection that both tribes have to water, as the disturbance of the
45 Amargosa River may cause a disturbance in the *Puha* that flows through it.
46 Both tribes are concerned that energy development within the area will greatly

1 reduce the amount of water that is available to the Tribe and to plants and
2 animals in the valley.

- 3
- 4 • Development of a project area within the SEZ will directly affect culturally
5 important plant and animal resources, as it will likely require the grading of
6 the project area and removal of vegetation.
- 7
- 8 • OHV use and nonvehicular recreational activities, such as hiking, and vehicle
9 traffic, have been identified by the tribal representatives as current impacts on
10 cultural resources, cultural landscapes, traditionally important plants and
11 animals, and water sources (SWCA and University of Arizona 2011).
- 12
- 13

14 **11.1.18.3 SEZ-Specific Design Features and Design Feature Effectiveness**

15
16 Tribal representatives believe that solar energy development within the Amargosa Valley
17 SEZ will adversely affect identified and unidentified archaeological resources, water sources,
18 culturally important geological features, naturally occurring prayer rocks, and traditional plant,
19 mineral, and animal resources (SWCA and University of Arizona 2011). Required programmatic
20 design features that would reduce impacts on Native American concerns are described in
21 Appendix A of this Final Solar PEIS. For example, impacts would be minimized through the
22 avoidance of sacred sites, water sources, and tribally important plant and animal species.
23 Programmatic design features require that the necessary surveys, evaluations, and consultations
24 would occur. The tribes would be notified regarding the results of archaeological surveys, and
25 they would be contacted immediately upon any discovery of Native American human remains
26 and associated cultural items.

27
28 On the basis of the impact analyses conducted for the Draft Solar PEIS, updates to those
29 analyses due to changes in SEZ boundaries, and consideration of comments received as
30 applicable, no SEZ-specific design features to address Native American concerns have been
31 identified. The need for and nature of SEZ-specific design features would be determined during
32 government-to-government consultation with the affected tribes as part of the process of
33 preparing parcels for competitive offer and subsequent project-specific analysis. Potential
34 culturally significant sites and landscapes in the vicinity of the SEZ associated with the
35 Fortymile Canyon, Bare Mountain, Eagle Mountain, Big Dune, Amargosa River, Ash Meadows,
36 and Salt Song and Southern Fox Trails, as well as rock art sites, clay, salt, and pigment sources,
37 water resources, and plant and animal resources, should be considered and discussed during
38 consultation.

39 40 41 **11.1.19 Socioeconomics**

42 43 44 **11.1.19.1 Affected Environment**

45
46 Although the boundaries of the Amargosa Valley SEZ have been changed, the
47 socioeconomic region of influence (ROI), the area in which site employees would live and spend

1 their wages and salaries and into which any in-migration would occur, includes the same
2 counties and communities as described in the Draft Solar PEIS, meaning that no changes in the
3 affected environment information given in the Draft Solar PEIS are required.
4

6 **11.1.19.2 Impacts**

7
8 Socioeconomic resources in the ROI around the SEZ could be affected by solar energy
9 development through the creation of direct and indirect employment and income, the generation
10 of direct sales and income taxes, SEZ acreage rental and capacity payments to BLM, the
11 in-migration of solar facility workers and their families, and impacts on local housing markets
12 and on local community service employment. The impact assessment provided in the Draft Solar
13 PEIS remains valid, with the following updates.
14

16 **11.1.19.2.1 Solar Trough**

19 **Construction**

20
21 Total construction employment impacts in the ROI (including direct and indirect impacts)
22 from the use of solar trough technologies would be up to 2,922 jobs (Table 11.1.19.2-1).
23 Construction activities would constitute 0.2% of total ROI employment. A solar facility would
24 also produce \$180.6 million in income; direct sales taxes would be \$1.2 million.
25

26 Given the scale of construction activities and the low likelihood that the entire
27 construction workforce in the required occupational categories would be available within the
28 ROI, construction of a solar facility would mean that some in-migration of workers and their
29 families from outside the ROI would be required, with up to 743 persons in-migrating into the
30 ROI. Although in-migration may potentially affect local housing markets, the relatively small
31 number of in-migrants and the availability of temporary accommodations (hotels, motels, and
32 mobile home parks) mean that the impact of solar facility construction on the number of vacant
33 rental housing units would not be expected to be large, with up to 257 rental units expected to be
34 occupied in the ROI. This occupancy rate would represent 0.5% of the vacant rental units
35 expected to be available in the ROI.
36

37 In addition to the potential impact on housing markets, in-migration would affect
38 community service employment (education, health, and public safety). An increase in such
39 employment would be required to meet existing levels of service in the ROI. Accordingly, up
40 to six new teachers, two physicians, and two public safety employees (career firefighters and
41 uniformed police officers) would be required in the ROI. These increases would represent less
42 than 0.1% of total ROI employment expected in these occupations.
43
44
45

1 **Operations**

2
3 Total operations employment impacts in the ROI (including direct and indirect impacts)
4 of a full build-out of the SEZ using solar trough technologies would be up to 444 jobs
5 (Table 11.1.19.2-1). Such a solar facility would also produce \$16.8 million in income;
6 direct sales taxes would be \$0.2 million. On the basis of fees established by the BLM
7 (BLM 2010), acreage-related fees would be \$0.5 million, and solar generating capacity fees,
8 at least \$8.9 million.

9
10 Operation of a solar facility likely would require some in-migration of workers and their
11 families from outside the ROI, with up to 38 persons in-migrating into the ROI. Although
12 in-migration may potentially affect local housing markets, the relatively small number of
13 in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home
14 parks) mean that the impact of solar facility operation on the number of vacant owner-occupied
15 housing units would not be expected to be large, with up to 23 owner-occupied units expected to
16 be occupied in the ROI.

17
18 No new community service employment would be required to meet existing levels of
19 service in the ROI.

20
21
22 ***11.1.19.2.2 Power Tower***

23
24
25 **Construction**

26
27 Total construction employment impacts in the ROI (including direct and indirect impacts)
28 from the use of power tower technologies would be up to 1,164 jobs (Table 11.1.19.2-2).
29 Construction activities would constitute 0.1% of total ROI employment. Such a solar facility
30 would also produce \$71.9 million in income; direct sales taxes would be \$0.5 million.

31
32 Given the scale of construction activities and the low likelihood that the entire
33 construction workforce in the required occupational categories would be available in the ROI,
34 construction of a solar facility would mean that some in-migration of workers and their families
35 from outside the ROI would be required, with up to 296 persons in-migrating into the ROI.
36 Although in-migration may potentially affect local housing markets, the relatively small number
37 of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile
38 home parks) mean that the impact of solar facility construction on the number of vacant rental
39 housing units would not be expected to be large, with up to 102 rental units expected to be
40 occupied in the ROI. This occupancy rate would represent 0.2% of the vacant rental units
41 expected to be available in the ROI.

42
43 In addition to the potential impact on housing markets, in-migration would affect
44 community service (education, health, and public safety) employment. An increase in such
45 employment would be required to meet existing levels of service in the ROI. Accordingly, up to
46 three new teachers, one physician, and one public safety employee would be required in the ROI.

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TABLE 11.1.19.2-1 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Amargosa Valley SEZ as Revised with Trough Facilities

Parameter	Maximum Annual Construction Impacts ^a	Annual Operations Impacts ^b
Employment (no.)		
Direct	1,744	296
Total	2,922	444
Income ^c		
Total	180.6	16.8
Direct state taxes ^{c,d}		
Sales	1.2	0.2
BLM payments ^c		
Acreage-related fee	NA ^e	0.5
Capacity fee ^f	NA	8.9
In-migrants (no.)	743	38
Vacant housing ^g (no.)	257	23
Local community service employment		
Teachers (no.)	6	0
Physicians (no.)	2	0
Public safety (no.)	2	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 600 MW (corresponding to 3,000 acres [12 km²] of land disturbance) could be built.

^b Operations impacts were based on full build-out of the site, producing a total output of 1,357 MW.

^c Values are reported in \$ million 2008.

^d There is currently no individual income tax in Nevada.

^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 2010), assuming a solar facility with no storage capability, and full build-out of the site. Projects with three 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.

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TABLE 11.1.19.2-2 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Amargosa Valley SEZ as Revised with Power Tower Facilities

Parameter	Maximum Annual Construction Impacts ^a	Annual Operations Impacts ^b
Employment (no.)		
Direct	695	153
Total	1,164	202
Income ^c		
Total	71.9	7.0
Direct state taxes ^c		
Sales	0.5	<0.1
BLM payments ^{c,d}		
Acreage-related fee	NA ^e	0.5
Capacity fee ^f	NA	5.0
In-migrants (no.)	296	19
Vacant housing ^g (no.)	102	12
Local community service employment		
Teachers (no.)	3	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 333 MW (corresponding to 3,000 acres [12 km²] of land disturbance) could be built.

^b Operations impacts were based on full build-out of the site, producing a total output of 754 MW.

^c Values are reported in \$ million 2008.

^d There is currently no individual income tax in Nevada.

^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 2010), assuming a solar facility with no storage capability, and full build-out of the site. Projects with three 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.

1 These increases would represent less than 0.1% of total ROI employment expected in these
2 occupations.

3 4 5 **Operations**

6
7 Total operations employment impacts in the ROI (including direct and indirect
8 impacts) of a full build-out of the SEZ using power tower technologies would be 202 jobs
9 (Table 11.1.19.2-2). Such a solar facility would also produce \$7.0 million in income; direct
10 sales taxes would be less than \$0.1 million. On the basis of fees established by the BLM
11 (BLM 2010), acreage-related fees would be \$0.5 million, and solar generating capacity fees,
12 at least \$5.0 million.

13
14 Operation of a solar facility likely would require some in-migration of workers and their
15 families from outside the ROI, with 19 persons in-migrating into the ROI. Although in-migration
16 may potentially affect local housing markets, the relatively small number of in-migrants and the
17 availability of temporary accommodations (hotels, motels, and mobile home parks) mean that the
18 impact of solar facility operation on the number of vacant owner-occupied housing units would
19 not be expected to be large, with 12 owner-occupied units expected to be required in the ROI.

20
21 No new community service employment would be required to meet existing levels of
22 service in the ROI.

23 24 25 ***11.1.19.2.3 Dish Engine***

26 27 28 **Construction**

29
30 Total construction employment impacts in the ROI (including direct and indirect
31 impacts) from the use of dish engine technologies would be up to 473 jobs (Table 11.1.19.2-3).
32 Construction activities would constitute less than 0.1% of total ROI employment. Such a solar
33 facility would also produce \$29.2 million in income; direct sales taxes would be \$0.2 million.

34
35 Given the scale of construction activities and the low likelihood that the entire
36 construction workforce in the required occupational categories would be available in the ROI,
37 construction of a solar facility would mean that some in-migration of workers and their families
38 from outside the ROI would be required, with up to 120 persons in-migrating into the ROI.
39 Although in-migration may potentially affect local housing markets, the relatively small number
40 of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile
41 home parks) mean that the impact of solar facility construction on the number of vacant rental
42 housing units would not be expected to be large, with up to 42 rental units expected to be
43 occupied in the ROI. This occupancy rate would represent 0.1 % of the vacant rental units
44 expected to be available in the ROI.

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TABLE 11.1.19.2-3 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Amargosa Valley SEZ as Revised with Dish Engine Facilities

Parameter	Maximum Annual Construction Impacts ^a	Annual Operations Impacts ^b
Employment (no.)		
Direct	282	148
Total	473	196
Income ^c		
Total	29.2	6.8
Direct state taxes ^c		
Sales	0.2	<0.1
BLM payments ^{c,d}		
Acreage-related fee	NA ^e	0.5
Capacity fee ^f	NA	5.0
In-migrants (no.)	120	19
Vacant housing ^g (no.)	42	12
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 333 MW (corresponding to 3,000 acres [12 km²] of land disturbance) could be built.

^b Operations impacts were based on full build-out of the site, producing a total output of 754 MW.

^c Values are reported in \$ million 2008.

^d There is currently no individual income tax in Nevada.

^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 2010), assuming a solar facility with no storage capability, and full build-out of the site. Projects with three 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.

1 In addition to the potential impact on housing markets, in-migration would affect
2 community service (education, health, and public safety) employment. An increase in such
3 employment would be required to meet existing levels of service in the ROI. Accordingly, up to
4 one new teacher would be required in the ROI. These increases would represent less than 0.1%
5 of total ROI employment expected in these occupations.
6

7 8 **Operations** 9

10 Total operations employment impacts in the ROI (including direct and indirect
11 impacts) of a full build-out of the SEZ using dish engine technologies would be 196 jobs
12 (Table 11.1.19.2-3). Such a solar facility would also produce \$6.8 million in income;
13 direct sales taxes would be less than \$0.1 million. On the basis of fees established by the BLM
14 (BLM 2010), acreage-related fees would be \$0.5 million, and solar generating capacity fees, at
15 least \$5.0 million.
16

17 Operation of a solar facility likely would require some in-migration of workers and their
18 families from outside the ROI, with up to 19 persons in-migrating into the ROI. Although
19 in-migration may potentially affect local housing markets, the relatively small number of
20 in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home
21 parks) mean that the impact of solar facility operation on the number of vacant owner-occupied
22 housing units would not be expected to be large, with up to 12 owner-occupied units expected to
23 be required in the ROI.
24

25 No new community service employment would be required to meet existing levels of
26 service in the ROI.
27

28 29 ***11.1.19.2.4 Photovoltaic*** 30

31 32 **Construction** 33

34 Total construction employment impacts in the ROI (including direct and indirect impacts)
35 from the use of PV technologies would be up to 221 jobs (Table 11.1.19.2-4). Construction
36 activities would constitute less than 0.1% of total ROI employment. Such a solar development
37 would also produce \$13.7 million in income; direct sales taxes would be \$0.1 million.
38

39 Given the scale of construction activities and the low likelihood that the entire
40 construction workforce in the required occupational categories would be available in the ROI,
41 construction of a solar facility would mean that some in-migration of workers and their families
42 from outside the ROI would be required, with up to 56 persons in-migrating into the ROI.
43 Although in-migration may potentially affect local housing markets, the relatively small number
44 of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile
45 home parks) mean that the impact of solar facility construction on the number of vacant rental
46 housing units would not be expected to be large, with 19 rental units expected to be occupied in

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TABLE 11.1.19.2-4 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Amargosa Valley SEZ as Revised with PV Facilities

Parameter	Maximum Annual Construction Impacts ^a	Annual Operations Impacts ^b
Employment (no.)		
Direct	132	15
Total	221	20
Income ^c		
Total	13.7	0.7
Direct state taxes ^c		
Sales	0.1	<0.1
BLM payments ^{c,d}		
Acreage-related fee	NA ^e	0.5
Capacity fee ^f	NA	4.0
In-migrants (no.)	56	2
Vacant housing ^g (no.)	19	1
Local community service employment		
Teachers (no.)	0	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 333 MW (corresponding to 3,000 acres [12 km²] of land disturbance) could be built.

^b Operations impacts were based on full build-out of the site, producing a total output of 754 MW.

^c Values are reported in \$ million 2008.

^d There is currently no individual income tax in Nevada.

^e NA = data 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 2010), assuming full build-out of the site.

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

4
5

1 the ROI. This occupancy rate would represent less than 0.1% of the vacant rental units expected
2 to be available in the ROI.

3
4 No new community service employment would be required to meet existing levels of
5 service in the ROI.

6 7 8 **Operations** 9

10 Total operations employment impacts in the ROI (including direct and indirect impacts)
11 of a full build-out of the SEZ using PV technologies would be 20 jobs (Table 11.1.19.2-4). Such
12 a solar facility would also produce \$0.7 million in income; direct sales taxes would be less than
13 \$0.1 million. On the basis of fees established by the BLM in its Solar Energy Interim Rental
14 Policy (BLM 2010), acreage-related fees would be \$0.5 million, and solar generating capacity
15 fees, at least \$4.0 million.
16

17
18 Operation of a solar facility likely would require some in-migration of workers and
19 their families from outside the ROI, with two persons in-migrating into the ROI. Although
20 in-migration may potentially affect local housing markets, the relatively small number of
21 in-migrants and the availability of temporary accommodations (hotels, motels, and mobile home
22 parks) mean that the impact of solar facility operation on the number of vacant owner-occupied
23 housing units would not be expected to be large, with one owner-occupied unit expected to be
24 required in the ROI.
25

26 No new community service employment would be required to meet existing levels of
27 service in the ROI.
28
29

30 **11.1.19.3 SEZ-Specific Design Features and Design Feature Effectiveness** 31

32 Required programmatic design features that would reduce socioeconomic impacts
33 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
34 programmatic design features will reduce the potential for socioeconomic impacts during all
35 project phases.
36

37 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
38 analyses due to changes to the SEZ boundaries, and consideration of comments received as
39 applicable, no SEZ-specific design features to address socioeconomic impacts in the proposed
40 Amargosa Valley SEZ have been identified. Some SEZ-specific design features may be
41 identified through the process of preparing parcels for competitive offer and subsequent project-
42 specific analysis.
43
44
45

1 **11.1.20 Environmental Justice**

2
3
4 **11.1.20.1 Affected Environment**

5
6 The data presented in the Draft Solar PEIS have not substantially changed due to the
7 change in boundaries of the proposed Amargosa Valley SEZ. There are no minority or
8 low-income populations in the Nevada or California portions of the 50-mi (80-km) radius of the
9 SEZ taken as a whole. However, because of the changes to the SEZ boundaries, revised data on
10 minority and low-income populations within a 50-mi (80-km) radius of the SEZ are presented in
11 Table 11.1.20.1-1 and are discussed below.

12
13 The data in Table 11.1.20.1-1 show the minority and low-income composition of the
14 total population located in the proposed Amargosa Valley SEZ based on 2000 Census data

15
16
17 **TABLE 11.1.20.1-1 Minority and Low-Income Populations**
18 **within the 50-mi (80-km) Radius Surrounding the Proposed**
19 **Amargosa Valley SEZ as Revised**

Parameter	California	Nevada
Total population	2,034	31,656
White, non-Hispanic	1,570	26,283
Hispanic or Latino	245	2,751
Non-Hispanic or Latino minorities	219	2,622
One race	162	1,858
Black or African American	2	1,001
American Indian or Alaskan Native	132	406
Asian	17	280
Native Hawaiian or Other Pacific Islander	9	95
Some other race	2	76
Two or more races	57	764
Total minority	464	5,373
Low-income	212	3,293
Percentage minority	22.8	17.0
State percentage minority	53.3	34.8
Percentage low-income	10.5	11.2
State percentage low-income	14.2	10.5

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

1 (U.S. Bureau of the Census 2009a,b) and Council on Environmental Quality (CEQ) guidelines
2 (CEQ 1997). Individuals identifying themselves as Hispanic or Latino are included in the table
3 as a separate entry. However, because Hispanics can be of any race, this number also includes
4 individuals identifying themselves as being part of one or more of the population groups listed in
5 the table.
6

7 A large number of minority and low-income individuals are located in the 50-mi (80-km)
8 area around the boundary of the SEZ. Within the 50-mi (80-km) radius in California, 22.8% of
9 the population is classified as minority, while 10.5% is classified as low-income. However, the
10 number of minority individuals does not exceed 50% of the total population in the area, and the
11 number of minority individuals does not exceed the state average by 20 percentage points or
12 more; thus, in aggregate, there is no minority population in the SEZ area based on 2000 Census
13 data and CEQ guidelines. The number of low-income individuals does not exceed the state
14 average by 20 percentage points or more and does not exceed 50% of the total population in the
15 area; thus, in aggregate, there are no low-income populations in the SEZ.
16

17 In the Nevada portion of the 50-mi (80-km) radius, 17.0% of the population is classified
18 as minority, while 11.2% is classified as low-income. The number of minority individuals does
19 not exceed 50% of the total population in the area and the number of minority individuals does
20 not exceed the state average by 20 percentage points or more; thus, in aggregate, there is no
21 minority population in the SEZ area based on 2000 Census data and CEQ guidelines. The
22 number of low-income individuals does not exceed the state average by 20 percentage points or
23 more and does not exceed 50% of the total population in the area; thus, in aggregate, there are
24 no low-income populations in the SEZ.
25

26 **11.1.20.2 Impacts**

27
28
29 Environmental justice concerns common to all utility-scale solar energy facilities are
30 described in detail in Section 5.18 of the Draft Solar PEIS. The potentially relevant
31 environmental impacts associated with solar facilities within the proposed Amargosa Valley
32 SEZ include noise and dust during construction; noise and electromagnetic field (EMF) effects
33 associated with operations; visual impacts of solar generation and auxiliary facilities, including
34 transmission lines; access to land used for economic, cultural, or religious purposes; and effects
35 on property values as areas of concern that might potentially affect minority and low-income
36 populations.
37

38 Potential impacts on low-income and minority populations could be incurred as a result
39 of the construction and operation of solar facilities involving each of the four technologies.
40 Impacts are likely to be small, and there are no minority populations defined by CEQ guidelines
41 (Section 11.1.20.1-1) within the 50-mi (80-km) radius around the boundary of the SEZ; this
42 means that any adverse impacts of solar projects would not disproportionately affect minority
43 populations. Because there are also no low-income populations within the 50-mi (80-km) radius,
44 there would be no impacts on low-income populations.
45
46

1 **11.1.20.3 SEZ-Specific Design Features and Design Feature Effectiveness**

2
3 Required programmatic design features that would reduce potential environmental justice
4 impacts are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
5 programmatic design features will reduce the potential for environmental justice impacts.
6

7 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
8 analyses due to changes to the SEZ boundaries, and consideration of comments received as
9 applicable, no SEZ-specific design features for environmental justice have been identified. Some
10 SEZ-specific design features may be identified through the process of preparing parcels for
11 competitive offer and subsequent project-specific analysis.
12

13
14 **11.1.21 Transportation**

15
16 **11.1.21.1 Affected Environment**

17
18
19 The reduction in developable area of the SEZ does not change the information on
20 affected environment provided in the Draft Solar PEIS.
21

22
23 **11.1.21.2 Impacts**

24
25 As stated in the Draft Solar PEIS, the primary transportation impacts are anticipated to
26 be from commuting worker traffic. Single projects could involve up to 1,000 workers each day,
27 with an additional 2,000 vehicle trips per day (maximum). This additional traffic on U.S. 95
28 would represent a two-thirds increase in traffic volume in the area of the SEZ. Because higher
29 traffic volumes would be experienced during shift changes, traffic on U.S. 95 could experience
30 moderate slowdowns during these time periods in the general area of the SEZ. Local road
31 improvements would be necessary on any portion of U.S. 95 that might be developed to avoid
32 overwhelming the local access roads near any site access point(s). Potential existing site access
33 roads would require improvements, including asphalt pavement.
34

35 Solar development within the SEZ would affect public access along OHV routes that
36 are designated open and available for public use. Although open routes crossing areas granted
37 ROWs for solar facilities could be redesignated as closed (see Section 5.5.1 of the Draft Solar
38 PEIS), a programmatic design feature has been included under Recreation (Section A.2.2.6.1 of
39 Appendix A) that requires consideration of replacement of lost OHV route acreage and of access
40 across and to public lands.
41

42
43 **11.1.21.3 SEZ-Specific Design Features and Design Feature Effectiveness**

44
45 Required programmatic design features that would reduce transportation impacts are
46 described in Section A.2.2 of Appendix A of this Final Solar PEIS. The programmatic design

1 features, including local road improvements, multiple site access locations, staggered work
2 schedules, and ride-sharing, would all provide some relief to traffic congestion on local roads
3 leading to the SEZ. Depending on the location of solar facilities within the SEZ, more specific
4 access locations and local road improvements could be implemented.

5
6 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
7 analyses due to changes to the SEZ boundaries, and consideration of comments received as
8 applicable, no SEZ-specific design features to address transportation impacts in the proposed
9 Amargosa Valley SEZ have been identified. Some SEZ-specific design features may be
10 identified through the process of preparing parcels for competitive offer and subsequent project-
11 specific analysis.

12 13 14 **11.1.22 Cumulative Impacts**

15
16 The analysis of potential impacts in the vicinity of the proposed Amargosa Valley SEZ
17 presented in the Draft Solar PEIS is still generally applicable for this Final Solar PEIS, although
18 the impacts would be decreased because the size of the developable area of the proposed SEZ
19 has been reduced to 8,479 acres (34.3 km²). Also, several previously pending projects now have
20 been dropped (there are now only six pending projects). The following sections include an
21 update to the information presented in the Draft Solar PEIS regarding cumulative effects for the
22 proposed Amargosa Valley SEZ.

23 24 25 **11.1.22.1 Geographic Extent of the Cumulative Impacts Analysis**

26
27 The geographic extent of the cumulative impact analysis has not changed. The extent
28 varies on the basis of the nature of the resource being evaluated and the distance at which the
29 impact may occur (e.g., air quality impacts may have a greater geographic extent than visual
30 resources impacts). Most of the lands around the Amargosa Valley SEZ are administered by the
31 BLM, the USFWS, the NPS, the U.S. Department of Energy (DOE), and the DoD. The BLM
32 administers approximately 28% of the lands within a 50-mi (80-km) radius of the SEZ.

33 34 35 **11.1.22.2 Overview of Ongoing and Reasonably Foreseeable Future Actions**

36
37 The Draft Solar PEIS included six other proposed SEZs in Nevada. Two of these,
38 Delamar Valley and East Mormon Mountain, have been removed from consideration.

39
40 One project (the Amargosa Farm Road project) has been authorized within a 50-mi
41 (80-km) radius of the proposed Amargosa Valley SEZ. Although the Amargosa Farm Road
42 project has an authorized ROW application, additional case processing and environmental review
43 will be required to consider a post-authorization request to change technology to PV.

44
45 There are also six pending ROW applications for solar facilities within 50 mi (80 km) of
46 the Amargosa Valley SEZ that could generate up to 2,610 MW on public lands in Nevada

1 (see list in Appendix B of this Final Solar PEIS). However, these applications are in various
2 stages of approval, and for many, environmental assessments have not been completed. Only the
3 Amargosa North Solar Project adjacent to the southern boundary of the SEZ and the Lathrop
4 Wells project, about 10 mi (16 km) southeast of the SEZ, have advanced to consideration as
5 reasonably foreseeable actions (because there are firm near-term plans and environmental
6 documentation has been completed). As of the end of October 2011, the other pending solar
7 applications were not considered reasonably foreseeable future actions.
8

9 The list of reasonably foreseeable future actions related to energy production and
10 distribution, including potential solar energy projects under the proposed action near the
11 proposed Amargosa Valley SEZ, has been updated and is presented in Table 11.1.22.2-1.
12 Projects listed in the table are shown in Figure 11.1.22.2-1. One project not previously described
13 in the Draft Solar PEIS is described in the following section.
14

15 16 ***11.1.22.2.1 Lathrop Wells Solar Facility*** 17

18 Abengoa Solar, Inc., proposes to construct and operate a 250-MW parabolic trough solar
19 generating facility, with an option to add a second 250-MW unit. The project may also include a
20 20-MW PV solar unit. The site is located on 5,336 acres (21.6 km²) of BLM land in Amargosa
21 Valley, 10 mi (16 km) southeast of the SEZ. The project would utilize a dry-cooling system to
22 minimize water requirements (BLM 2012b).
23

24 25 ***11.1.22.2.2 Other Actions*** 26

27 The list of other major ongoing and foreseeable actions within 50 mi (80 km) of the
28 proposed Amargosa Valley SEZ has been updated and is presented in Table 11.1.22.2-2.
29

30 31 ***11.1.22.3 General Trends*** 32

33 The information on general trends presented in the Draft Solar PEIS remains valid.
34

35 36 ***11.1.22.4 Cumulative Impacts on Resources*** 37

38 Total disturbance over 20 years in the proposed Amargosa Valley SEZ is assumed to
39 be about 6,783 acres (27.5 km²) (80% of the entire proposed SEZ). This development would
40 contribute incrementally to the impacts from other past, present, and reasonably foreseeable
41 future actions in the region as described in the Draft Solar PEIS. Primary impacts from
42 development in the Amargosa Valley SEZ may include impacts on water quantity and quality,
43 air quality, ecological resources such as habitat and species, cultural and visual resources, and
44 on specially designated lands.
45

1 **TABLE 11.1.22.2-1 Ongoing and Reasonably Foreseeable Future Actions Related to Energy**
 2 **Development and Distribution near the Proposed Amargosa Valley SEZ as Revised^a**

Description	Status	Resources Affected	Primary Impact Location
<i>Approved and Priority Solar Energy Projects on BLM-Administered Land</i>			
Amargosa Farm Road Solar Energy Project (Solar Millennium) (NVN-84359), 484-MW, originally planned as parabolic trough; converting to PV, 6,320 total acres^{b,c}	ROD November 15, 2010	Terrestrial habitats, wildlife	6 mi ^d southeast of the SEZ
Amargosa North Solar Project (NVN-84465), 150-MW PV, 7,500 acres	NOI December 14, 2009	Terrestrial habitats, wildlife	Adjacent to the SEZ
Lathrop Wells Solar Project (Abengoa Solar) (NVN-86571), up to 500-MW parabolic trough, possibly 20-MW PV, 5,336 acres	NOI July 15, 2010	Terrestrial habitats, Wildlife	10 mi southeast of the SEZ
<i>Transmission and Distribution Systems</i>			
138-kV transmission line	Operating		Corridor passes adjacent to the SEZ

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

b See SEIA (2011) for details.

c To convert acres to km², multiply by 0.004047.

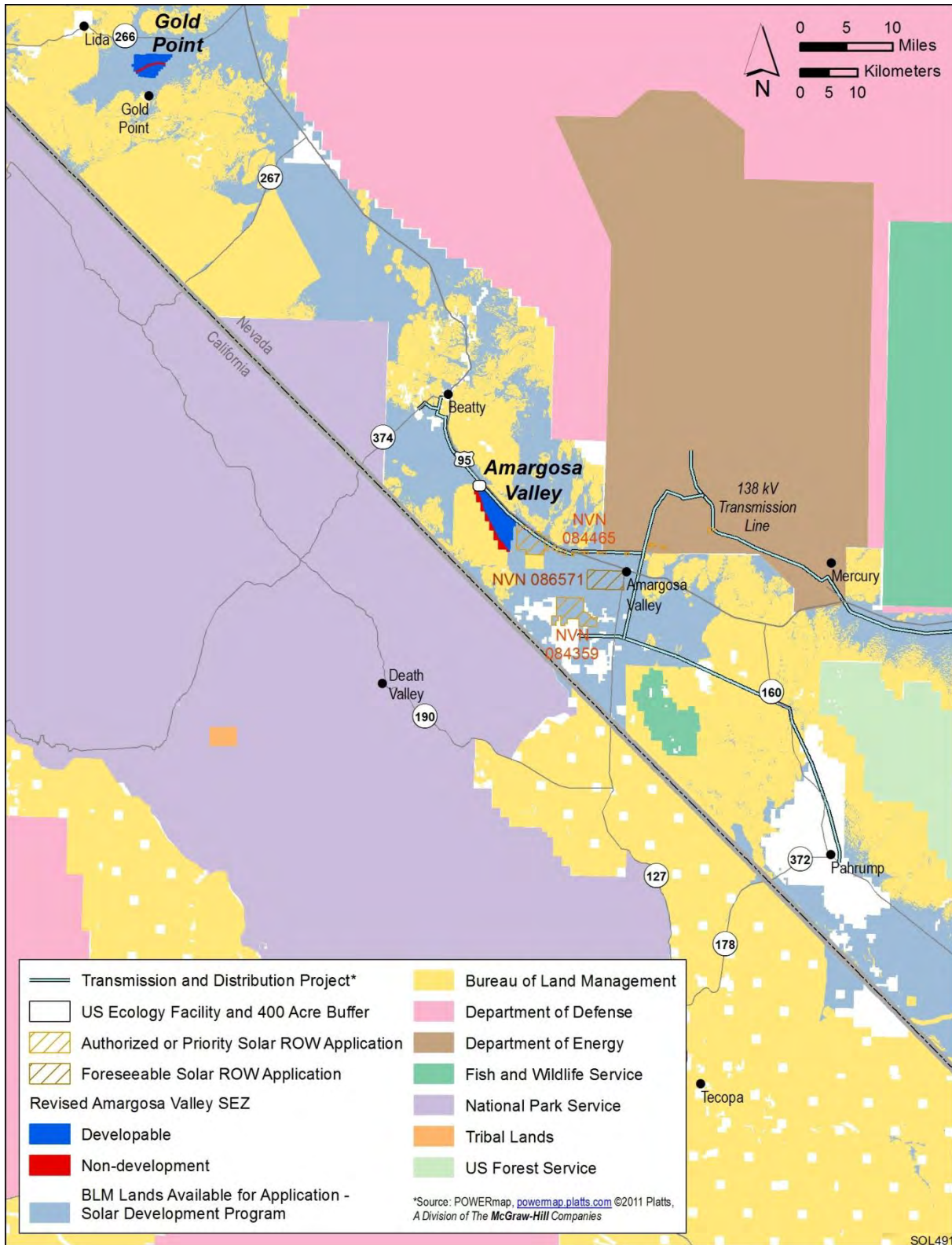
d To convert mi to km, multiply by 1.6093.

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Activities in the region that will contribute to cumulative impacts include one additional solar project that that was not considered foreseeable at the time the Draft Solar PEIS was prepared: the Lathrop Wells Solar Facility. This will be a 250- to 500-MW dry-cooled parabolic trough facility.

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14

Overall, the incremental cumulative impacts associated with the development of the proposed Amargosa Valley SEZ during construction, operation, and decommissioning are expected to be the same or less than those described in the Draft Solar PEIS. This is because the size of the Amargosa Valley SEZ has decreased by approximately 73%. Also, as a result of the change in technology from parabolic trough to PV in the nearby Amargosa Farm Road Solar



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FIGURE 11.1.22.2-1 Locations of Existing and Reasonably Foreseeable Renewable Energy Projects on Public Land within a 50-mi (80-km) Radius of the Proposed Amargosa Valley SEZ as Revised (Source: Platts 2011)

1 **TABLE 11.1.22.2-2 Other Major Actions near the Proposed Amargosa Valley SEZ as Revised^a**

Description	Status	Resources Affected	Primary Impact Location
Beatty Water and Sanitation District Water Treatment Plant	EA November 2009 Operation began March 16, 2011^b	Soils, minor other impacts	10 mi ^c north of SEZ
Caliente Rail Realignment	FEIS June 2008	Terrestrial habitats, wildlife cultural resources	8 mi northeast of the SEZ
Hazardous Waste Management Facility	In operation since 1962	Soils, terrestrial habitats, noise, air quality	Adjacent to the SEZ

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

^b See Stephens (2011) for details.

^c To convert mi to km, multiply by 1.6093.

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Energy Project, the projected water use impacts in the region are expected to be lower than projected in the Draft Solar PEIS.

11.1.23 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 Amargosa Valley SEZ, including the identification of potential load areas to be served by power generated at the SEZ and the results of the dedicated-line transmission (DLT) analysis. Unlike Sections 11.1.2 through 11.1.22, this section is not an update of previous analysis for the Amargosa Valley 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.

On the basis of its size, the assumption of a minimum of 5 acres (0.02 km²) of land required per MW, and the assumption of a maximum of 80% of the land area developed, the Amargosa Valley SEZ is estimated to have the potential to generate 1,357 MW of marketable solar power at full build-out.

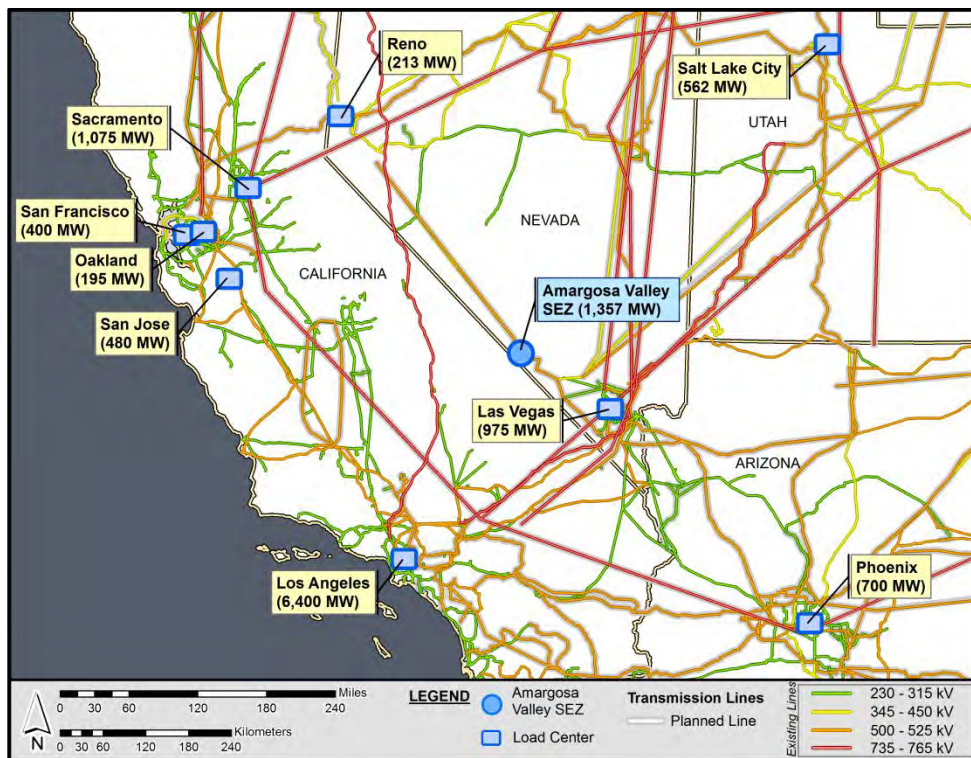
1 **11.1.23.1 Identification and Characterization of Load Areas**

2
3 The primary candidates for Amargosa Valley SEZ load areas are the major surrounding
4 cities. Figure 11.1.23.1-1 shows the possible load areas for the Amargosa Valley SEZ and the
5 estimated portion of their market that could be served by solar generation. Possible load areas for
6 the Amargosa Valley SEZ include Phoenix, Arizona; Salt Lake City, Utah; Las Vegas and Reno,
7 Nevada; and Los Angeles, San Jose, San Francisco, Oakland, and Sacramento, California.

8
9 The two load area groups examined for the Amargosa Valley SEZ are as follows:

- 10
11 1. Las Vegas, Nevada; and Los Angeles, California; and
12
13 2. Las Vegas, Nevada; and Phoenix, Arizona.

14
15 Figures 11.1.23.1-2 shows the most economically viable transmission scheme for the
16 Amargosa Valley SEZ (transmission scheme 1), and Figure 11.1.23.1-3 shows an alternative
17 transmission scheme (transmission scheme 2) that represents a logical choice should
18 transmission scheme 1 be infeasible. As described in Appendix G, the alternative shown in
19 transmission scheme 2 represents the optimum choice if one or more of the primary linkages in
20 transmission scheme 1 are excluded from consideration. The groups provide for linking loads
21 along alternative routes so that the SEZ's output of 1,357 MW could be fully allocated.



24
25 **FIGURE 11.1.23.1-1 Location of the Proposed Amargosa Valley SEZ and**
26 **Possible Load Areas (Source for background map: Platts 2011)**



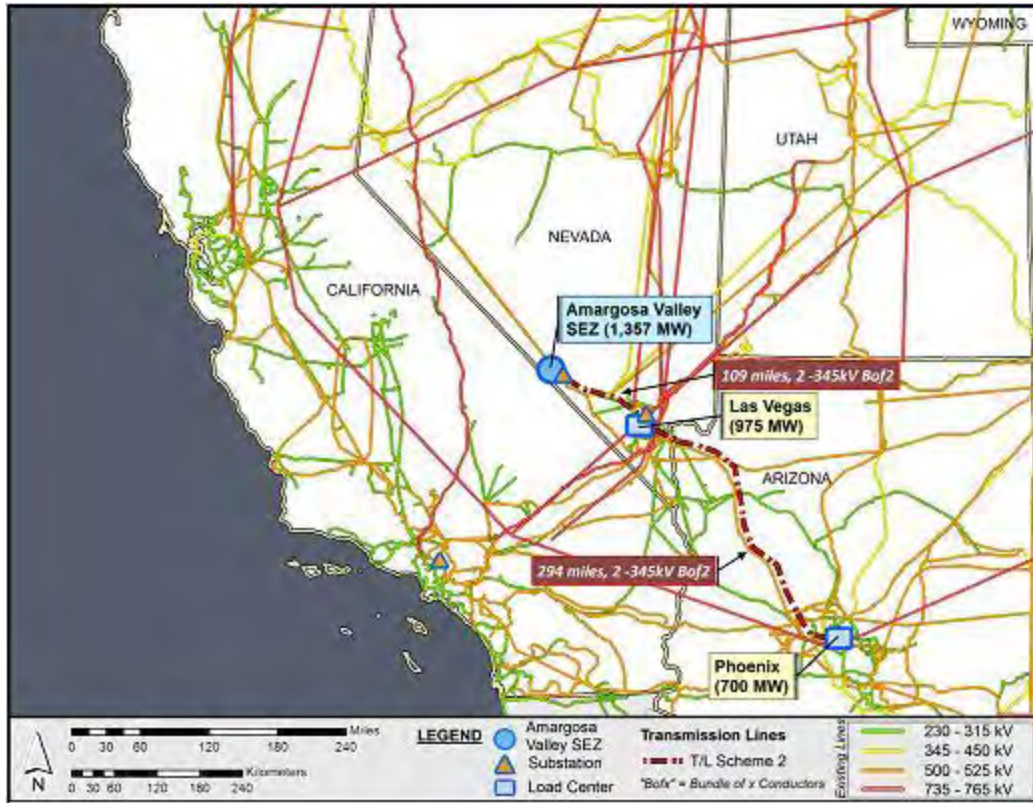
FIGURE 11.1.23.1-2 Transmission Scheme 1 for the Proposed Amargosa Valley SEZ (Source for background map: Platts 2011)

Table 11.1.23.1-1 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.

11.1.23.2 Findings for the DLT Analysis

The DLT analysis approach assumes that the Amargosa Valley SEZ will require all new construction for transmission lines (i.e., dedicated lines) and substations. The new transmission lines(s) would directly convey the 1,357-MW output of the Amargosa Valley SEZ to the prospective load areas for each possible transmission scheme. The approach also assumes that all existing transmission lines in the Western Electricity Coordinating Council (WECC) region are saturated and have little or no available capacity to accommodate the SEZ's output throughout the entire 10-year study horizon.

Figures 11.1.23.1-2 and 11.1.23.1-3 display the pathways that new dedicated lines might follow to distribute solar power generated at the Amargosa Valley SEZ via the two identified transmission schemes described in Table 11.1.23.1-1. These pathways parallel existing 500-, 345-, 230-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.



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FIGURE 11.1.23.1-3 Transmission Scheme 2 for the Proposed Amargosa Valley SEZ (Source for background map: Platts 2011)

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For transmission scheme 1, a new line would be constructed to connect with Las Vegas (975 MW) and Los Angeles (6,400 MW), so that the 1,357-MW output of the Amargosa Valley SEZ could be fully utilized by these two load centers (Figure 11.1.23.1-2). This particular scheme requires two segments. One segment extends to the southeast from the SEZ to Las Vegas (975 MW) over a distance of about 109 mi (175 km). This segment would require a double-circuit 345-kV (2-345 kV) bundle of two conductors (Bof2) transmission line design based on engineering and operational considerations. The second segment extends to the southwest from Las Vegas (975 MW) to Los Angeles (6,400 MW) over a distance of about 280 mi (451 km). This segment would require a double-circuit 345-kV bundle of two conductors (Bof2) transmission line design. In general, the transmission configuration options were determined using the line “loadability” curve provided in American Electric Power’s *Transmission Facts* (AEP 2010). Appendix G documents the line options used for this analysis and describes how the load area groupings were determined.

For transmission scheme 2 serving load centers to the southeast, Figure 11.1.23.1-3 shows that new lines would be constructed to connect with Las Vegas (975 MW) and Phoenix (700 MW), so that the 1,357-MW output of the Amargosa Valley SEZ could be fully utilized by these two load centers. This scheme requires two segments. The first segment extends to the southeast from the SEZ to Las Vegas (975 MW) over a distance of about 109 mi (175 km). This segment would require a double-circuit 345-kV bundle of two (Bof2) transmission line design.

1 **TABLE 11.1.23.1-1 Candidate Load Area Characteristics for the Proposed Amargosa**
 2 **Valley 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	Las Vegas, Nevada ^a	Southeast	1,950,000	4,875	975
	Los Angeles, California ^a	Southwest	12,800,000	32,000	6,400
2	Las Vegas, Nevada ^a	Southeast	1,950,000	4,875	975
	Phoenix, Arizona ^b	Southeast	1,400,000	3,500	700

^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).

3
 4
 5 The second segment runs about 294 mi (473 km) southeast from Las Vegas to Phoenix
 6 (700 MW). The second segment requires a double-circuit 345-kV bundle of two transmission
 7 line design.

8
 9 Table 11.1.23.2-1 summarizes the distances to the various load areas over which new
 10 transmission lines would need to be constructed, as well as the assumed number of substations
 11 that would be required. One substation is assumed to be installed at each load area and an
 12 additional one at the SEZ. Thus, in general, the total number of substations per scheme is simply
 13 equal to the number of load areas associated with the scheme plus one. Substations at the load
 14 areas would consist of one or more step-down transformers, while the originating substation at
 15 the SEZ would consist of several step-up transformers. The originating substation would have a
 16 rating of at least 1,357 MW (to match the plant’s output), while the combined-load substations
 17 would have a similar total rating of 1,357 MW. For schemes that require the branching of the
 18 lines, a switching substation is assumed to be constructed at the appropriate junction. In general,
 19 switching stations carry no local load but are assumed to be equipped with switching gears
 20 (e.g., circuit breakers and connecting switches) to reroute power as well as, in some cases, with
 21 additional equipment to regulate voltage.

22
 23 Table 11.1.23.2-2 provides an estimate of the total land area disturbed for construction
 24 of new transmission facilities under each of the schemes evaluated. The most favorable
 25 transmission scheme with respect to minimizing costs and the area disturbed would be scheme 1,
 26 which would serve Las Vegas and Los Angeles. This scheme is estimated to potentially disturb
 27 about 8,284 acres (33.5 km²) of land. The less favorable transmission scheme with respect to
 28 minimizing costs and the area disturbed would be scheme 2, which serves Las Vegas and
 29 Phoenix loads. For this scheme, the construction of new transmission lines and substations is
 30 estimated to disturb a land area on the order of 8,581 acres (34.7 km²).

1 **TABLE 11.1.23.2-1 Potential Transmission Schemes, Estimated Solar Markets, and Distances**
 2 **to Load Areas for the Proposed Amargosa Valley SEZ**

Transmission Scheme	City/Load Area Name	Estimated Peak Solar Market (MW) ^c	Total Solar Market (MW)	Sequential Distance (mi) ^c	Total Distance (mi) ^d	Line Voltage (kV)	No. of Substations
1	Las Vegas, Nevada ^a	975	7,375	109	389	345	3
	Los Angeles, California ^a	6,400		280			
2	Las Vegas, Nevada ^a	975	1,675	109	403	345	3
	Phoenix, Arizona ^b	700		294			

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 11.1.23.1-1.

d To convert mi to km, multiply by 1.6093.

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TABLE 11.1.23.2-2 Comparison of the Various Transmission Line Configurations with Respect to Land Use Requirements for the Proposed Amargosa Valley SEZ

Transmission Scheme	City/Load Area Name	Total Distance (mi) ^c	No. of Substations	Land Use (acres) ^d		
				Transmission Line	Substation	Total
1	Las Vegas, Nevada ^a	389	3	8,251.5	32.6	8,284.1
	Los Angeles, California ^a					
2	Las Vegas, Nevada ^a	403	3	8,548.5	32.6	8,581.1
	Phoenix, Arizona ^b					

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 km², multiply by 0.004047.

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1 Table 11.1.23.2-3 shows the estimated net present value (NPV) of both transmission
 2 schemes and takes into account the cost of constructing the lines, the substations, and the
 3 projected revenue stream over the 10-year horizon. A positive NPV indicates that revenue more
 4 than offsets investments. This calculation does not include the cost of producing electricity.
 5

6 The most economically attractive configuration (transmission scheme 1) has the highest
 7 positive NPV and serves Las Vegas and Los Angeles. The secondary case (transmission
 8 scheme 2), which excludes one or more of the primary pathways used in scheme 1, is less
 9 economically attractive and focuses on delivering power to the Las Vegas and Phoenix markets.
 10 For the assumed utilization factor of 20%, both options exhibit positive NPVs of similar
 11 magnitude, implying similar degrees of economic viability under the current assumptions.
 12

13 Table 11.1.23.2-4 shows the effect of varying the value of the utilization factor on the
 14 NPV of the transmission schemes. It also shows that as the utilization factor is increased, the
 15 economic viability of the lines also increases. Utilization factors can be raised by allowing the
 16 new dedicated lines to market other power generation outputs in the region in addition to that of
 17 its associated SEZ.
 18

19 The findings of the DLT analysis for the proposed Amargosa Valley SEZ are as follows:
 20

- 21 • Transmission scheme 1, which identifies Las Vegas and Los Angeles as the
 22 primary markets, represents the most favorable option based on NPV and land
 23 use requirements. This configuration would result in new land disturbance of
 24 about 8,284 acres (33.5 km²).
 25
- 26 • Transmission scheme 2, which represents an alternative configuration, serves
 27 Las Vegas and Phoenix. This configuration would result in new land
 28 disturbance of about 8,581 acres (34.7 km²).
 29
 30

31 **TABLE 11.1.23.2-3 Comparison of Potential Transmission Lines with Respect to NPV (Base Case)**
 32 **for the Proposed Amargosa Valley 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	Las Vegas, Nevada ^a Los Angeles, California ^a	972.5	89.6	237.7	1,835.8	773.8
2	Las Vegas, Nevada ^a Phoenix, Arizona ^b	1,007.5	89.6	237.7	1,835.8	738.8

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

^b The load area represents the city named.

1 **TABLE 11.1.23.2-4 Effects of Varying the Utilization Factor on the NPV of the Transmission**
 2 **Schemes for the Proposed Amargosa Valley SEZ**

Transmission Scheme	City/Load Area Name	NPV (\$ million) at Different Utilization Factors					
		20%	30%	40%	50%	60%	70%
1	Las Vegas, Nevada ^a Los Angeles, California ^a	774	1,692	2,610	3,527	4,445	5,363
2	Las Vegas, Nevada ^a Phoenix, Arizona ^b	739	1,657	2,272	3,492	4,410	5,328

^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 Amargosa 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 Amargosa Valley SEZ would be expected to show lower costs and less land disturbance if solar-eligible load assumptions were increased, although the magnitude of those changes would vary due to a number of factors. In general, for cases such as the Amargosa Valley SEZ that show multiple load areas being served to accommodate the specified capacity, the estimated costs and land disturbance would be affected by increasing the solar-eligible load assumption. By increasing the eligible loads at all load areas, the transmission routing and configuration solutions can take advantage of shorter line distances and deliveries to fewer load areas, thus reducing costs and land disturbed. In general, SEZs that show the greatest number of load areas served and greatest distances required for new transmission lines (e.g., Riverside East) would show the greatest decrease in impacts as a result of increasing the solar-eligible load assumption from 20% to a higher percentage.

11.1.24 Impacts of the Withdrawal

The BLM is proposing to withdraw 9,737 acres (39 km²) of public land comprising the proposed Amargosa Valley SEZ from settlement, sale, location, or entry under the general land laws, including the mining laws, for a period of 20 years (see Section 2.2.2.2.4 of the Final Solar PEIS). The public lands would be withdrawn, subject to valid existing rights, from settlement, sale, location, or entry under the general land laws, including the mining laws. This means that

1 the lands could not be appropriated, sold, or exchanged during the term of the withdrawal, and
2 new mining claims could not be filed on the withdrawn lands. Mining claims filed prior to the
3 segregation or withdrawal of the identified lands would take precedence over future solar energy
4 development. The withdrawn lands would remain open to the mineral leasing, geothermal
5 leasing, and mineral material laws, and the BLM could elect to lease the oil, gas, coal, or
6 geothermal steam resources, or to sell common-variety mineral materials, such as sand and
7 gravel, contained in the withdrawn lands. In addition, the BLM would retain the discretion to
8 authorize linear and renewable energy ROWs on the withdrawn lands.
9

10 The purpose of the proposed land withdrawal is to minimize the potential for conflicts
11 between mineral development and solar energy development for the proposed 20-year
12 withdrawal period. Under the land withdrawal, there would be no mining-related surface
13 development, such as the establishment of open pit mining, construction of roads for hauling
14 materials, extraction of ores from tunnels or adits, or construction of facilities to process the
15 material mined, that could preclude use of the SEZ for solar energy development. For the
16 Amargosa Valley SEZ, the impacts of the proposed withdrawal on mineral resources and related
17 economic activity and employment are expected to be negligible because the mineral potential of
18 the lands within the SEZ is low (BLM 2012a). There has been no documented mining within the
19 SEZ, and there are no known locatable mineral deposits within the land withdrawal area.
20 According to the Legacy Rehost 2000 System (LR2000) (accessed in May 2012), there are no
21 recorded mining claims within the land withdrawal area.
22

23 Although the mineral potential of the lands within the Amargosa Valley SEZ is low, the
24 proposed withdrawal of lands within the SEZ would preclude many types of mining activity over
25 a 20-year period, resulting in the avoidance of potential mining-related adverse impacts. Impacts
26 commonly related to mining development include increased soil erosion and sedimentation,
27 water use, generation of contaminated water in need of treatment, creation of lagoons and ponds
28 (hazardous to wildlife), toxic runoff, air pollution, establishment of noxious weeds and invasive
29 species, habitat destruction or fragmentation, disturbance of wildlife, blockage of migration
30 corridors, increased visual contrast, noise, destruction of cultural artifacts and fossils and/or their
31 context, disruption of landscapes and sacred places of interest to tribes, increased traffic and
32 related emissions, and conflicts with other land uses (e.g., recreational).
33
34

35 **11.1.25 References**

36
37 *Note to Reader:* This list of references identifies Web pages and associated URLs where
38 reference data were obtained for the analyses presented in this Final Solar PEIS. It is likely that
39 at the time of publication of this Final Solar PEIS, some of these Web pages may no longer be
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7
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15 Cooperative Fish and Wildlife Research Unit, New Mexico State University. Available at
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19 Accessed Jan. 16, 2012.
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23
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25 *(EDMS)*. Available at <http://www.wrapedms.org/default.aspx>. Accessed June 4, 2009.
26

1 **11.1.26 Errata for the Proposed Amargosa Valley SEZ**
2

3 This section presents corrections to material presented in the Draft Solar PEIS and the
4 Supplement to the Draft. The need for these corrections was identified in several ways: through
5 comments received on the Draft Solar PEIS and the Supplement to the Draft (and verified by
6 the authors), through new information obtained by the authors subsequent to publication of the
7 Draft Solar PEIS and the Supplement to the Draft, or through additional review of the original
8 material by the authors. Table 11.1.26-1 provides corrections to information presented in the
9 Draft Solar PEIS and the Supplement to the Draft.
10

TABLE 11.1.26-1 Errata for the Proposed Amargosa Valley SEZ (Section 11.1 of the Draft Solar PEIS and Section C.4.1 of the Supplement to the Draft Solar PEIS)

Section No.	Page No.	Line No.	Figure No.	Table No.	Correction
11.1.11.2					All uses of the term “neotropical migrants” in the text and tables of this section should be replaced with the term “passerines.”
11.1.15.2.1	11.1-262	21			“For the parabolic trough and power tower technologies...” should read “For construction activities associated with solar power technologies...”
C.4.1.5.11	C-159 through C-161				The California Desert National Conservation Area (CDNCA) was omitted from the discussion of sensitive visual resource areas that would be subject to moderate or strong visual contrast from solar development within the Amargosa Valley SEZ in Section C.4.1.5.11 of the Supplement. Because of the proximity of this resource area to the SEZ, the potential for open views of the SEZ, and the presence of elevated viewpoints, weak to strong visual contrasts could be observed by visitors to this area. This resource area consists of 25,919,319 acres (104,892 km ²). Portions of the CDNCA within the 650-ft (198.1-m) viewshed for the Amargosa Valley SEZ, as presented in the Draft Solar PEIS, include approximately 94,485 acres (382.37 km ²), or 0.4% of the total CDNCA acreage.

1 **11.2 DELAMAR VALLEY**
2

3 As stated at the beginning of this chapter, the Delamar Valley SEZ was dropped from
4 further consideration through the Supplement to the Draft Solar PEIS. This section presents the
5 information (with minor updates) provided in Appendix B of the Supplement to the Draft Solar
6 PEIS on the rationale for dropping this SEZ.
7

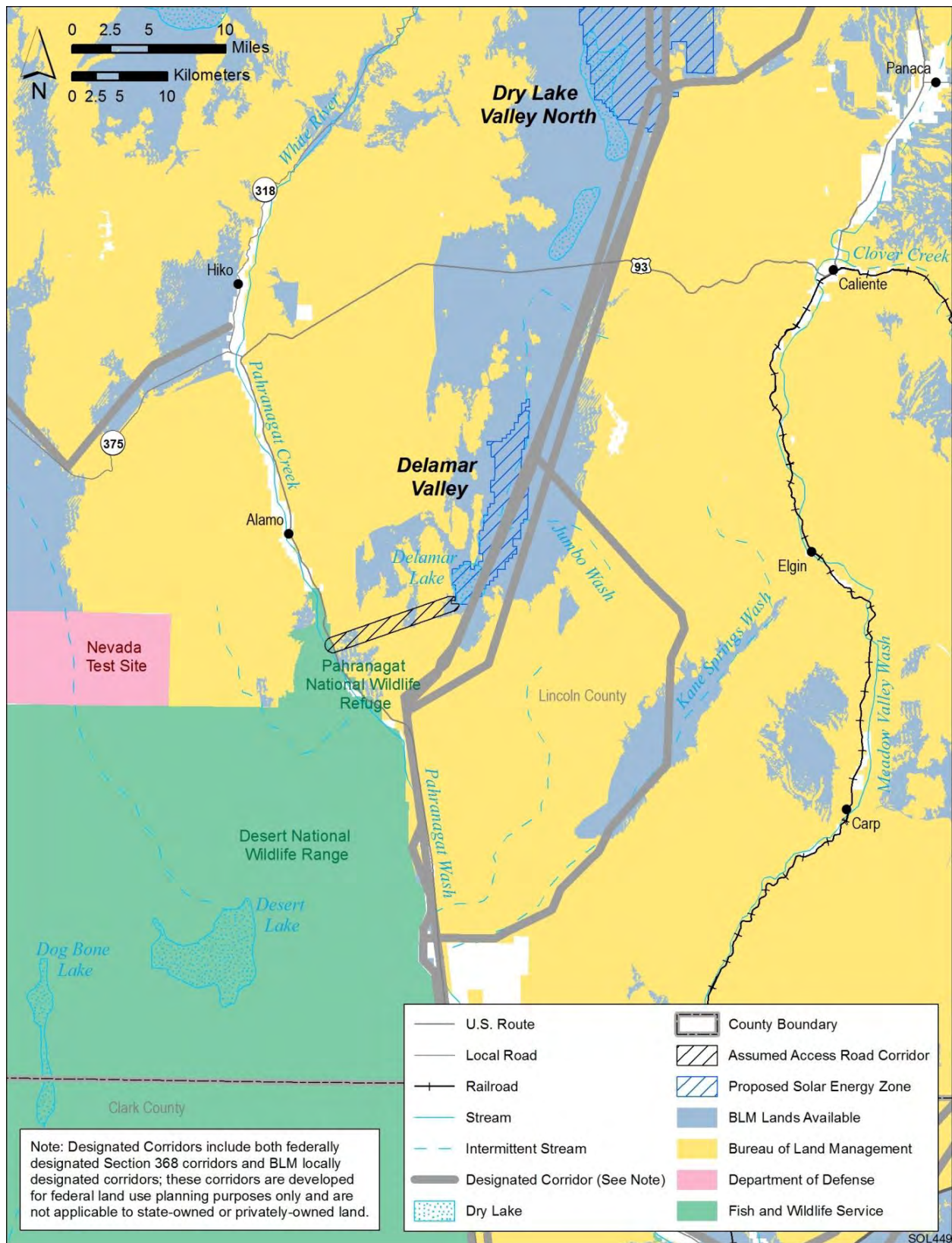
8
9 **11.2.1 Summary of Potential Impacts Identified in the Draft Solar PEIS**
10

11 The proposed Delamar Valley SEZ, as presented in the Draft Solar PEIS, had a
12 total area of 16,552 acres (67 km²). It is located in Lincoln County in southeastern Nevada
13 (Figure 11.2.1-1). The largest nearby town is Alamo, Nevada, about 11 mi (18 km) west of
14 the SEZ.
15

16 The Draft Solar PEIS identified U.S. 93, about 9 mi (14.5 km) west of the SEZ, as the
17 nearest major road and assumed that a new access road would be constructed from there to the
18 proposed SEZ to support development (see Figure 11.2.1-1). The Draft Solar PEIS identified a
19 locally designated transmission corridor that occupies about 2,919 acres (12 km²), or 22% of the
20 eastern portion of the proposed Delamar Valley SEZ, and a ROW application from the Southern
21 Nevada Water Authority (SNWA) for a pipeline that would pass through the middle of the
22 proposed SEZ. Both of these ROWs could limit development in the SEZ because solar facilities
23 cannot be constructed under transmission lines or over pipelines. Further, the Draft Solar PEIS
24 discussion of impacts of solar energy development in the SEZ acknowledged that solar facility
25 development on both sides of the corridor would limit the ability to add future corridor capacity.
26

27 Potential environmental and other impacts identified in the Draft Solar PEIS included the
28 following:
29

- 30 • Because of the 14-mi (23-km) length of the SEZ, east to west travel across the
31 valley could be cut off, requiring extensive detours for recreational users of
32 the public land (this area is a popular recreation area).
33
- 34 • Visual impacts of solar energy development would have the potential to affect
35 wilderness characteristics of the Delamar Mountains and South Pahroc WAs.
36 Night-time lighting of solar development could adversely affect the quality of
37 the night sky environment in adjacent specially designated areas.
38
- 39 • If full solar development would occur in the SEZ, the federal grazing permit
40 for the Buckhorn grazing allotment would be reduced in area by about 18%
41 and about 606 animal unit months (AUMs) would be lost. Because the SEZ
42 would occupy some of the best grazing land in the allotment, it is possible that
43 the grazing operation would become economically infeasible and that all
44 3,709 AUMs currently authorized would be lost.
45



1

2 **FIGURE 11.2.1-1 Proposed Delamar Valley SEZ as Presented in the Draft Solar PEIS**

- 1 • Because the SEZ includes numerous roads and trails, construction of solar
2 energy facilities could have a major impact on existing recreational travel.
3
- 4 • The DoD expressed serious concern over construction of solar energy
5 facilities within the SEZ, and Nellis Air Force Base indicated that any
6 facilities with structures higher than 100 ft (30 m) may be incompatible with
7 low-level aircraft use of the military training range. The Nevada Test and
8 Training Range (NTTR) indicated that solar technologies requiring structures
9 higher than 50 ft (15 m) AGL may present unacceptable electromagnetic
10 compatibility concerns for its test mission.
11
- 12 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
13 erosion by wind and runoff, sedimentation, and soil contamination) could
14 occur. Delamar Lake may not be a suitable location for construction.
15
- 16 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
17 wet-cooling options would not be feasible.
18
- 19 • Clearing of a large portion of the proposed SEZ could primarily affect
20 communities associated with Delamar Lake and other playa habitats, Jumbo
21 Wash and the unnamed intermittent stream, greasewood flats communities,
22 riparian habitats, marshes, or other intermittently flooded areas, depending on
23 the amount of habitat disturbed. Joshua tree communities within the northern
24 portion of the SEZ and within the assumed access road corridor could be
25 directly or indirectly affected. The establishment of noxious weeds could
26 result in habitat degradation. Deposition of fugitive dust could cause reduced
27 productivity or changes in plant community structure
28
- 29 • Potentially suitable habitat for 49 special status species occurs in the affected
30 area of the proposed SEZ; potential impacts on these species and any wildlife
31 species could range from small to large depending on the solar energy
32 technology deployed, the scale of development within the SEZ, and the
33 cumulative rate of groundwater withdrawals.
34
- 35 • If aquatic biota are present in Delamar Lake playa, dry washes, or a nearby
36 marsh, they could be affected by the direct removal of surface water features
37 within the construction footprint, a decline in habitat quantity and quality due
38 to water withdrawals and changes in drainage patterns, as well as increased
39 sediment and contaminant inputs associated with ground disturbance and
40 construction activities.
41
- 42 • Temporary exceedances of ambient air quality standards for particulate
43 matter at the SEZ boundaries are possible during construction. These high
44 concentrations, however, would be limited to the immediate area surrounding
45 the SEZ boundary.
46

- 1 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
2 could be observed by residents nearest to the SEZ. Strong visual contrasts
3 could also be observed by visitors to the Delamar Valley WA, North Delamar
4 SRMA, and the Pahrnagat SRMA. Weak to strong visual contrasts could be
5 observed by visitors to the South Pahroc Range WA.
6
- 7 • Few, if any, impacts on significant paleontological resources are likely to
8 occur in 73% of the proposed SEZ, while the potential in the remaining 27%
9 of the SEZ is unknown. The SEZ has a high potential for containing
10 prehistoric sites, especially in the dry lake area at the southern end of the
11 SEZ; thus, direct impacts on significant cultural resources could occur in the
12 proposed SEZ. Indirect impacts on cultural resources outside of the SEZ are
13 possible in rock shelter and petroglyph sites immediately west of the SEZ.
14 Visual impacts on areas of traditional cultural importance could occur.
15
- 16 • Both minority and low-income populations occur within a 50-mi (80-km)
17 radius of the proposed SEZ boundary; thus adverse impacts of solar
18 development could disproportionately affect minority and low-income
19 populations.
20

21 22 **11.2.2 Summary of Comments Received**

23
24 Many comments received on the proposed Delamar Valley SEZ were in favor of
25 eliminating the area as an SEZ (N-4 State Grazing Board; DoD; Lincoln County, Nevada;
26 and Western Watersheds Project [WWP]). Many comments expressed concern for ranching
27 operations in the area and the effect of solar development in the proposed SEZ on grazing
28 allotments in the area.
29

30 The Wilderness Society et al.¹ and Nevada Wilderness Project suggested removing the
31 southern end of the SEZ because the sensitive resources in the playa lake make it inappropriate
32 for solar development. The DoD was concerned that any development in the SEZ would have an
33 immediate adverse effect on current and future DoD operations on the NTTR. In comments on
34 the Draft Solar PEIS, Lincoln County opposed designation of Delamar Valley as an SEZ because
35 of its potential adverse impacts on water resources, soil resources, vegetation resources, visual
36 resources, recreation, livestock grazing, wildlife, and county socioeconomics. If, however, the
37 SEZ were to be carried forward, Lincoln County recommended that only PV technologies be
38 considered because of the lack of groundwater resources in the area. In subsequent comments,
39 Lincoln County has requested that the former area of the Delamar Valley SEZ be designated as a
40 solar development exclusion area.
41

¹ The Wilderness Society, Center for Biological Diversity, Defenders of Wildlife, Sierra Club–Toiyabe Chapter, National Parks Conservation Association, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Nevada SEZs. Those comments are attributed to The Wilderness Society et al.

1 The Nevada Wilderness Project recommended avoiding Joshua tree habitat along the
2 northern portion of the SEZ. The WPP and The Wilderness Society et al. recommended
3 eliminating Delamar Valley as an SEZ because of the region's limited groundwater availability
4 and because the groundwater basin is fully appropriated. The SNWA expressed concern over
5 impacts on ROWs for the Groundwater Development Project.
6

7 An ethnographic study for the Delamar Valley SEZ area was recently conducted, and a
8 summary of that study was presented in the Supplement to the Draft Solar PEIS. The agencies
9 value the information shared by the Tribes during the ethnographic study and will consider their
10 input in striving to minimize the impacts of solar development. The completed ethnographic
11 study is available in its entirety on the Solar PEIS Web site (<http://solareis.anl.gov>).
12
13

14 **11.2.3 Rationale for Eliminating the SEZ**

15
16 On the basis of public comments received on the Draft Solar PEIS, review by the BLM,
17 and continued review of potential impacts identified in the Draft Solar PEIS, the Delamar Valley
18 SEZ was eliminated from further consideration and will not be identified as an SEZ in applicable
19 land use plans. The potential impacts from solar development in the proposed Delamar Valley
20 SEZ were considered sufficient reason to eliminate the area from further consideration.
21

22 Although the area has been dropped from consideration as an SEZ, the lands that
23 composed the proposed Delamar Valley SEZ will be retained as solar ROW variance areas,
24 because the BLM expects that individual projects could be sited in this area to avoid and/or
25 minimize impacts. Any solar development within this area in the future would require
26 appropriate environmental analysis.
27
28

29 **11.2.4 References**

30
31 *Note to Reader:* This list of references identifies Web pages and associated URLs where
32 reference data were obtained for the analyses presented in this Final Solar PEIS. It is likely that
33 at the time of publication of this Final Solar PEIS, some of these Web pages may no longer be
34 available or their URL addresses may have changed. The original information has been retained
35 and is available through the Public Information Docket for this Final Solar PEIS.
36

37 SWCA and University of Arizona (SWCA Environmental Consultants and Bureau of Applied
38 Research in Anthropology), 2011, *Ethnographic and Class I Records Searches for Proposed*
39 *Solar Energy Zones in California, Nevada, and Utah for the Bureau of Land Management's*
40 *Solar Programmatic Environmental Impact Statement*, prepared by SWCA Environmental
41 Consultants, Albuquerque, N.M., and Bureau of Applied Research in Anthropology, University
42 of Arizona, Tucson, Ariz., Dec.
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1 **11.3 DRY LAKE**

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4 **11.3.1 Background and Summary of Impacts**

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7 **11.3.1.1 General Information**

8
9 The proposed Dry Lake SEZ is located in Clark County in southern Nevada. In 2008, the
10 county population was 1,879,093. The towns of Moapa Town and Overton are as close as 18 mi
11 (29 km) northeast and 23 mi (37 km) east of the SEZ, respectively. Nellis Air Force Base is
12 located approximately 13 mi (21 km) southwest of the SEZ. The nearest major roads accessing
13 the proposed Dry Lake SEZ are I-15, which passes along the southeastern boundary of the SEZ,
14 and U.S. 93, which runs from northwest to southeast along part of the southwest border of the
15 SEZ. The UP Railroad runs north to south along a portion of the eastern SEZ boundary, with the
16 nearest stop in Las Vegas. As of October 28, 2011, there were three pending solar applications
17 within or adjacent to the SEZ and an additional large application area located about 2 mi (3 km)
18 to the east of the SEZ across I-15.
19

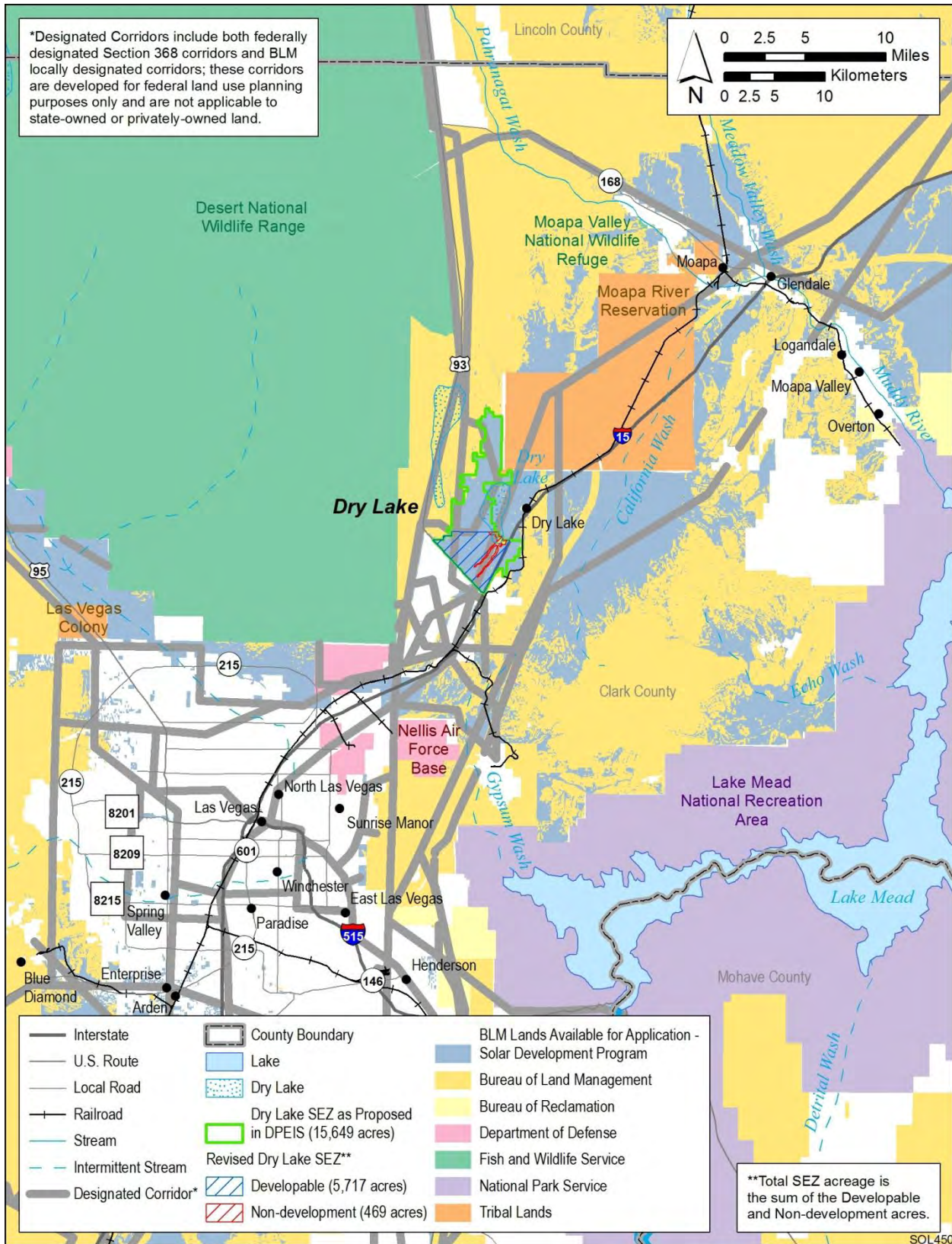
20 As published in the Draft Solar PEIS (BLM and DOE 2010), the proposed Dry Lake SEZ
21 had a total area of 15,649 acres (63 km²). In the Supplement to the Draft Solar PEIS (BLM and
22 DOE 2011), the size of the SEZ was reduced, eliminating 9,463 acres (38 km²) to include only
23 the southernmost area that is northwest of I-15 (see Figure 11.3.1.1-1). Eliminating the northern
24 portion of the SEZ is primarily intended to avoid or minimize some potential impacts from
25 development in the SEZ, including impacts on desert tortoise and other wildlife and on military
26 operations. In addition, 469 acres (1.9 km²) of floodplain and wetland were identified as non-
27 development areas. The remaining developable area within the SEZ is 5,717 acres (23 km²).
28

29 The lands eliminated from the proposed Dry Lake SEZ will be retained as solar ROW
30 variance areas, because the BLM expects that individual projects could be sited in these areas to
31 avoid and/or minimize impacts. Any solar development within these areas in the future would
32 require appropriate environmental analysis.
33

34 The analyses in the following sections update the affected environment and potential
35 environmental, cultural, and socioeconomic impacts associated with utility-scale solar energy
36 development in the Dry Lake SEZ as described in the Draft Solar PEIS.
37
38

39 **11.3.1.2 Development Assumptions for the Impact Analysis**

40
41 Maximum solar development of the Dry Lake SEZ was assumed to be 80% of the
42 developable SEZ area over a period of 20 years, a maximum of 4,574 acres (18.5 km²) (see
43 Figure 11.3.1.1-2). Full development of the Dry Lake SEZ would allow development of facilities
44 with an estimated total of between 508 MW (power tower, dish engine, or PV technologies,
45 9 acres/MW [0.04 km²/MW]) and 915 MW (solar trough technologies, 5 acres/MW
46 [0.02 km²/MW]) of electrical power capacity.



1

2 **FIGURE 11.3.1.1-1 Proposed Dry Lake SEZ as Revised**

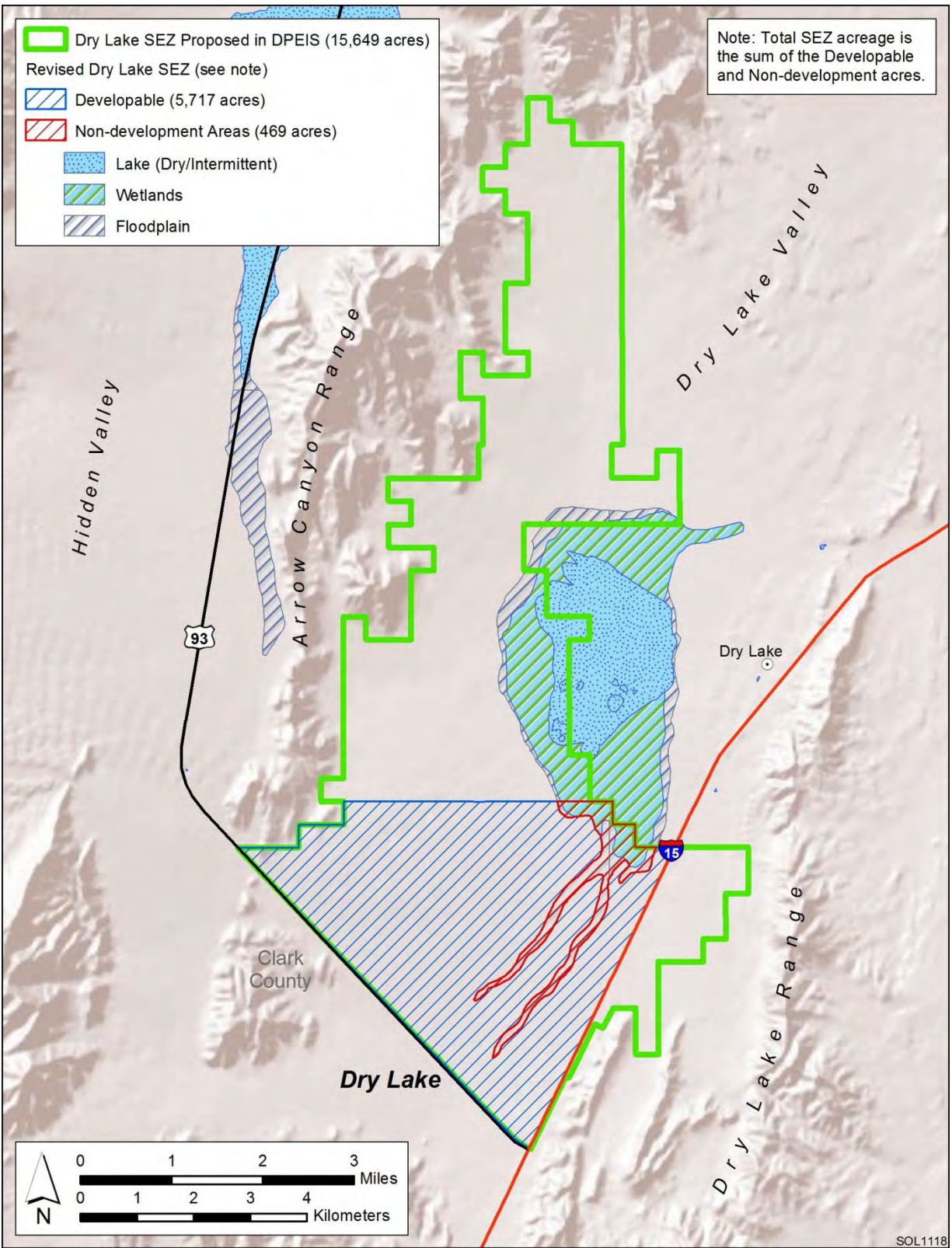


FIGURE 11.3.1.1-2 Developable and Non-development Areas for the Proposed Dry Lake SEZ as Revised

1 Availability of transmission from SEZs to load centers will be an important consideration
2 for future development in SEZs. For the proposed Dry Lake SEZ, several existing transmission
3 lines, including a 500-kV line, run through the SEZ. It is possible that an existing line could be
4 used to provide access from the SEZ to the transmission grid, but a 500-kV capacity line may
5 not be adequate for 508 to 915 MW of new capacity (a 500-kV line can accommodate
6 approximately the load of one 700-MW facility). Therefore, at full build-out capacity, new
7 transmission and possibly upgrades of existing transmission lines may be required to bring
8 electricity from the proposed Dry Lake SEZ to load centers. An assessment of the most likely
9 load center destinations for power generated at the Dry Lake SEZ and a general assessment of
10 the impacts of constructing and operating new transmission facilities on those load centers is
11 provided in Section 11.3.23. In addition, the generic impacts of transmission and associated
12 infrastructure construction and of line upgrades for various resources are discussed in Chapter 5
13 of this Final Solar PEIS. Project-specific analyses would also be required to identify the specific
14 impacts of new transmission construction and line upgrades for any projects proposed within
15 the SEZ.

16
17 The Dry Lake SEZ partially overlaps three locally designated transmission corridors that
18 are heavily developed with natural gas, petroleum product, and electric transmission lines
19 (including a 500-kV transmission line). For this impact assessment, it is assumed that up to 80%
20 of the proposed SEZ could be developed. This does not take into account the potential limitations
21 to solar development that may result from siting constraints associated with these corridors. The
22 development of solar facilities and existing corridors will be dealt with by the BLM on a case-
23 by-case basis, see Section 11.3.2.2 on impacts on lands and realty for further discussion.

24
25 For the proposed Dry Lake SEZ, I-15 and U.S. 93 are adjacent to the SEZ. Existing road
26 access to the proposed Dry Lake SEZ should be adequate to support construction and operation
27 of solar facilities. No additional road construction outside of the SEZ was assumed to be required
28 to support solar development, as summarized in Table 11.3.1.2-1.

31 **11.3.1.3 Programmatic and SEZ-Specific Design Features**

32
33 The proposed programmatic design features for each resource area to be required under
34 the BLM Solar Energy Program are presented in Section A.2.2 of Appendix A of this Final Solar
35 PEIS. These programmatic design features are intended to avoid, minimize, and/or mitigate
36 adverse impacts of solar energy development and will be required for development on all BLM-
37 administered lands including SEZ and non-SEZ lands.

38
39 The discussions below addressing potential impacts of solar energy development on
40 specific resource areas (Sections 11.3.2 through 11.3.22) also provide an assessment of the
41 effectiveness of the programmatic design features in mitigating adverse impacts from solar
42 development within the SEZ. SEZ-specific design features to address impacts specific to the
43 proposed Dry Lake SEZ may be required in addition to the programmatic design features.
44 The proposed SEZ-specific design features for the Dry Lake SEZ have been updated on the

1
2

TABLE 11.3.1.2-1 Assumed Development Acreages, Solar MW Output, and Nearest Major Access Road and Transmission Line for the Proposed Dry Lake 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	Assumed Area of Road ROW	Distance to Nearest Designated Corridor ^e
5,717 acres ^a and 4,574 acres	508 MW ^b 915 MW ^c	I-15 and U.S. 93, 0 mi ^d	0 mi and 500 kV	0 acres	0 mi

- ^a To convert acres to km², 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 km²/MW) of land required.
- ^c Maximum power output if the SEZ were fully developed using solar trough technologies, assuming 5 acres/MW (0.02 km²/MW) of land required.
- ^d To convert mi to km, multiply by 1.6093.
- ^e BLM-designated corridors are developed for federal land use planning purposes only and are not applicable to state-owned or privately owned land.

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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 to the Draft. All applicable SEZ-specific design features identified to date (including those from the Draft Solar PEIS that are still applicable) are presented in Sections 11.3.2 through 11.3.22.

11.3.2 Lands and Realty

11.3.2.1 Affected Environment

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The total size of the proposed SEZ has been reduced from 15,649 acres (63 km²) to 6,186 acres (25 km²), and the remaining area is the southern portion of the original SEZ. The northern boundary of the revised SEZ is about 7.5 mi (12 km) south of the original northern boundary, and the southeastern boundary is now located just west of I-15. 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. There were three active solar applications within or adjacent to the SEZ as of October 28, 2011, and an additional large application area located about 1 mi (1.6 km) to the east of the SEZ across I-15.

1 Three designated transmission corridors that are heavily developed with natural gas,
2 petroleum product, and electric transmission lines (including a 500-kV transmission line) pass
3 through the proposed SEZ.
4

6 **11.3.2.2 Impacts**

7
8 Solar development of the SEZ would establish a large industrial area that would exclude
9 many existing and potential uses of the land, perhaps in perpetuity. Full development of the
10 revised proposed SEZ is anticipated to disturb up to 4,574 acres (18.5 km²). The amount of
11 existing electrical transmission and pipelines within the SEZ has been reduced by the boundary
12 changes for the SEZ, but the proposed Dry Lake SEZ still partially overlaps three locally
13 designated corridors. These existing corridors will be the preferred locations for any transmission
14 development that is required to support solar development and future transmission grid
15 improvements related to the build-out of the Dry Lake SEZ. Any use of the corridor lands
16 within the Dry Lake SEZ for solar energy facilities, such as solar panels or heliostats, must be
17 compatible with the future use of the existing corridors. The BLM will assess solar projects in
18 the vicinity of existing corridors on a case-by-case basis. The BLM will review and approve
19 individual project plans of development to ensure compatible development that maintains the
20 use of the corridor.
21

23 **11.3.2.3 SEZ-Specific Design Features and Design Feature Effectiveness**

24
25 Required programmatic design features that would reduce impacts on lands and realty
26 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
27 programmatic design features will provide some mitigation for the identified impacts but will not
28 mitigate all adverse impacts. For example, impacts related to the exclusion of many existing and
29 potential uses of the public land, the visual impact of an industrial-type solar facility within an
30 otherwise rural area, and induced land use changes, if any, on nearby or adjacent state and
31 private lands may not be fully mitigated.
32

33 No SEZ-specific design features for lands and realty have been identified through this
34 Final Solar PEIS. Some SEZ-specific design features may be established for parcels within the
35 Dry Lake SEZ through the process of preparing parcels for competitive offer and subsequent
36 project-specific analysis.
37

39 **11.3.3 Specially Designated Areas and Lands with Wilderness Characteristics**

42 **11.3.3.1 Affected Environment**

43
44 The description in the Draft Solar PEIS is still accurate with some small changes in the
45 distance of specially designated areas from the revised SEZ boundary. The major exception to
46 this is for Arrow Canyon Wilderness, which would now be about 10 mi (16 km) from the SEZ

1 boundary. In addition, the distance to the Old Spanish National Historic Trail has increased to
2 about 2.1 mi (3.4 km), in comparison to the 1.3 mi (2.1 km) presented in the Draft Solar PEIS.
3
4

5 **11.3.3.2 Impacts**

6

7 Impacts on specially designated areas would be the same as those described in the Draft
8 Solar PEIS with the exception of Arrow Canyon Wilderness. Because of the additional distance
9 between Arrow Canyon Wilderness and the SEZ boundary, it is now anticipated that there would
10 be minimal impact on wilderness characteristics. The distance between the SEZ and the Old
11 Spanish National Historic Trail has also increased somewhat and may result in slightly less
12 impact on the historical setting of the high-potential segment of the Trail. Impacts of solar energy
13 facilities will differ depending on the technologies being installed, with taller facilities having
14 relatively more impact than shorter facilities.
15

16 **11.3.3.3 SEZ-Specific Design Features and Design Feature Effectiveness**

17

18
19 Required programmatic design features that would reduce impacts on specially
20 designated areas are described in Section A.2.2 of Appendix A of this Final Solar PEIS (design
21 features for specially designated areas, cultural resources, and visual resources would address
22 impacts). Implementing the programmatic design features will provide some mitigation for
23 adverse impacts on wilderness characteristics and possibly recreational use of the identified
24 areas. Programmatic design features will be applied to address SEZ-specific resources and
25 conditions, for example:
26

- 27 • For projects in the Dry Lake SEZ which are located within the viewshed of
28 the Old Spanish National Historic Trail, a National Trail inventory will be
29 required to determine the area of possible adverse impact on resources,
30 qualities, values, and associated settings of the trail; to prevent substantial
31 interference; and to determine any areas unsuitable for development. Residual
32 impacts will be avoided, minimized, and/or mitigated to the extent practicable
33 according to program policy standards. Programmatic design features have
34 been included in BLM's Solar Energy Program to address impacts on
35 National Historic Trails (see Section A.2.2.23 of Appendix A).
36
37

38 No SEZ-specific design features for specially designated areas have been identified in
39 this Final Solar PEIS. Some SEZ-specific design features may be identified through the process
40 of preparing parcels for competitive offer and subsequent project-specific analysis.
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1 **11.3.4 Rangeland Resources**

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4 **11.3.4.1 Livestock Grazing**

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7 ***11.3.4.1.1 Affected Environment***

8
9 As presented in the Draft Solar PEIS, there are no active grazing allotments in the
10 proposed Dry Lake SEZ. The revised area of the SEZ does not alter this finding.
11

12
13 ***11.3.4.1.2 Impacts***

14
15 Because the SEZ does not contain any active grazing allotments, solar energy
16 development within the SEZ would have no impact on livestock and grazing.
17

18
19 ***11.3.4.1.3 SEZ-Specific Design Features and Design Feature Effectiveness***

20
21 Because the SEZ does not contain any active grazing allotments, no SEZ-specific design
22 features to protect livestock grazing have been identified in this Final Solar PEIS.
23

24
25 **11.3.4.2 Wild Horses and Burros**

26
27
28 ***11.3.4.2.1 Affected Environment***

29
30 As presented in Section 11.3.4.2.1 of the Draft Solar PEIS, no wild horse or burro herd
31 management areas occur within the proposed Dry Lake SEZ or in close proximity to it. The
32 reconfiguration of the SEZ does not alter this finding.
33

34
35 ***11.3.4.2.2 Impacts***

36
37 As presented in the Draft Solar PEIS, solar energy development within the proposed Dry
38 Lake SEZ would not affect wild horses and burros. Development within the revised area of the
39 Dry Lake SEZ would not alter this conclusion.
40

41
42 ***11.3.4.2.3 SEZ-Specific Design Features and Design Feature Effectiveness***

43
44 Because solar energy development within the proposed Dry Lake SEZ would not affect
45 wild horses and burros, no SEZ-specific design features to address wild horses and burros have
46 been identified in this Final Solar PEIS.
47

1 **11.3.5 Recreation**

2
3
4 **11.3.5.1 Affected Environment**

5
6 The discussion of recreation use of the proposed SEZ in the Draft Solar PEIS was
7 focused on the northern portion of the SEZ that has been dropped from further consideration.
8 The proposed boundaries of the revised area contain the more developed portions of the SEZ,
9 and this area offers very little in the way of recreation opportunities. Some roads and trails are
10 designated for vehicle use in the area, but their most important function is thought to be
11 providing access to areas to the north that are now outside of the SEZ boundary. Other than
12 road use, there is little sign of recreation activity in the area.

13
14
15 **11.3.5.2 Impacts**

16
17 The impacts on recreation stated in the Draft Solar PEIS are still generally accurate,
18 although there are fewer roads and trails within the revised SEZ boundary that would be closed.
19 Closing of roads could adversely affect access to undeveloped areas within the SEZ and areas
20 outside the SEZ.

21
22 In addition, lands that are outside of the proposed SEZ may be acquired or managed for
23 mitigation of impacts on other resources (e.g., sensitive species). Managing these lands for
24 mitigation could further exclude or restrict recreational use, potentially leading to additional
25 losses in recreational opportunities in the region. The impact of acquisition and management of
26 mitigation lands would be considered as a part of the environmental analysis of specific solar
27 energy projects.

28
29
30 **11.3.5.3 SEZ-Specific Design Features and Design Feature Effectiveness**

31
32 Required programmatic design features that would reduce impacts on recreational
33 resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS (design features
34 for both specially designated areas and visual resources also would address some impacts).
35 Implementing the programmatic design features for visual impacts will help minimize the
36 impacts of individual solar projects. Implementing the programmatic design features for
37 recreation will mitigate the loss of road access to surrounding areas but not mitigate the loss of
38 recreational access to public lands developed for solar energy production or the loss of wildlife-
39 related hunting recreation.

40
41 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
42 analyses due to changes to the SEZ boundaries, and consideration of comments received as
43 applicable, no SEZ-specific design features to address recreation impacts have been identified.
44 Some SEZ-specific design features may be identified through the process of preparing parcels
45 for competitive offer and subsequent project-specific analysis.

1 **11.3.6 Military and Civilian Aviation**

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4 **11.3.6.1 Affected Environment**

5
6 The proposed Dry Lake SEZ as revised is not located under any military airspace, nor
7 is it identified as a DoD Consultation Area in BLM land records. It is located about 13.5 mi
8 (22 km) northeast of Nellis Air Force Base, one of the largest fighter bases in the world. While
9 not located under designated military airspace, the area is close to airspace that is used for
10 military aircraft approaches and departures from Nellis. Data provided in the Draft Solar PEIS
11 remain valid.

12
13
14 **11.3.6.2 Impacts**

15
16 Nellis Air Force Base Command has continued to express concerns over potential
17 impacts on the approach and departure of aircraft from the base from solar energy facilities that
18 might be located in the SEZ. The NTTR has also indicated that facilities taller than 50 ft (15 m)
19 may interfere with testing activities at the NTTR. It is not clear whether the reduction in size of
20 the proposed SEZ will mitigate any of these concerns.

21
22
23 **11.3.6.3 SEZ-Specific Design Features and Design Feature Effectiveness**

24
25 Required programmatic design features that would reduce impacts on military and
26 civilian aviation are described in Section A.2.2 of Appendix A of this Final Solar PEIS. The
27 programmatic design features require early coordination with the DoD to identify and avoid,
28 minimize, and/or mitigate, if possible, potential impacts on the use of military airspace.

29
30 No SEZ-specific design features for military and civilian aviation have been identified in
31 this Final Solar PEIS. Some SEZ-specific design features may be identified through the process
32 of preparing parcels for competitive offer and subsequent project-specific analysis.

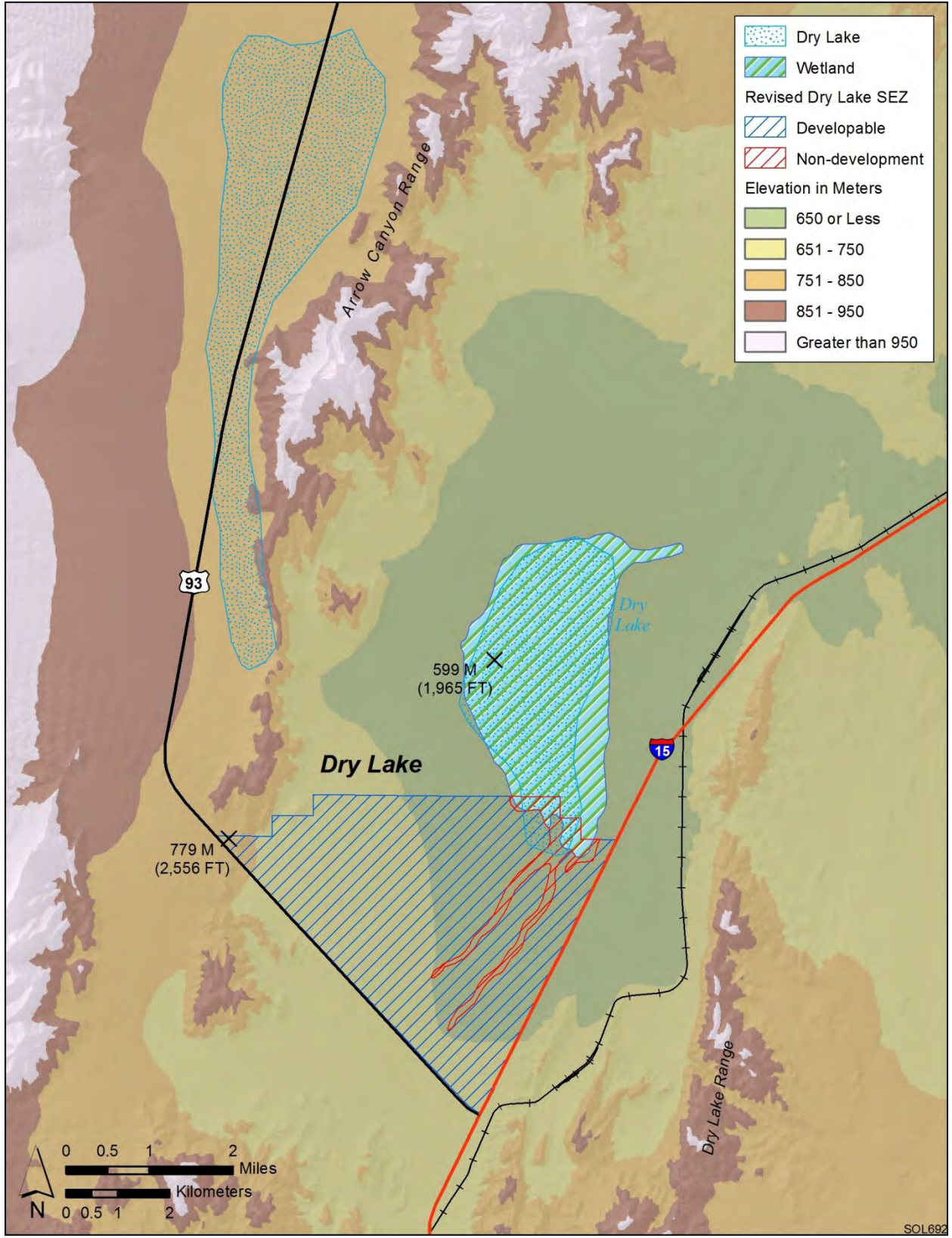
33
34
35 **11.3.7 Geologic Setting and Soil Resources**

36
37
38 **11.3.7.1 Affected Environment**

39
40
41 ***11.3.7.1.1 Geologic Setting***

42
43 Data provided in the Draft Solar PEIS remain valid, with the following update:

- 44
45 • The terrain of the proposed Dry Lake SEZ is relatively flat
46 (Figure 11.3.7.1-1). The boundaries of the proposed SEZ have been



1

2 **FIGURE 11.3.7.1-1 General Terrain of the Proposed Dry Lake SEZ as Revised**

1 changed to exclude the northern portion of the SEZ. Within the revised area,
2 469 acres (1.9 km²) of floodplain and wetland have been designated as
3 non-development areas. On the basis of these changes, the elevations range
4 from about 2,560 ft (780 m) at the northwest corner to about 2,000 ft (610 m)
5 at the northeast corner.
6
7

8 **11.3.7.1.2 Soil Resources**

9

10 Data provided in the Draft Solar PEIS remain valid, with the following updates:
11

- 12 • Soils within the proposed Dry Lake SEZ as revised are predominantly very
13 gravelly and stony loams of the Colorock–Tonopah and Bard–Tonopah
14 associations, which now make up about 95% of the soil coverage at the site
15 (Table 11.3.7.1-1).
16
- 17 • Soil unit coverage at the proposed Dry Lake SEZ as revised is shown in
18 Figure 11.3.7.1-2. The designation of new SEZ boundaries and
19 non-development areas eliminate 4,713 acres (19 km²) of the Colorock–
20 Tonopah association, 15 acres (0.061 km²) of the Bard–Tonopah association,
21 1,546 acres (6.3 km²) (all) of the Bard very stony loam, 1,189 acres (4.8 km²)
22 of the Bard gravelly fine sandy loam, 724 acres (2.9 km²) of the Ireteba loam-
23 overflow, 516 acres (2.1 km²) (all) of the Ireteba loam, 415 acres (1.7 km²)
24 (all) of the Grapevine loam, 226 acres (0.91 km²) of the Rock land-
25 St. Thomas association, 195 acres (0.79 km²) (all) playas, and 116 acres
26 (0.47 km²) (all) of the Bard very gravelly fine sandy loam.
27
28

29 **11.3.7.2 Impacts**

30

31 Impacts on soil resources would occur mainly as a result of ground-disturbing activities
32 (e.g., grading, excavating, and drilling), especially during the construction phase of a solar
33 project. Because impacts on soil resources result from ground-disturbing activities in the project
34 area, soil impacts would be roughly proportional to the size of a given solar facility, with larger
35 areas of disturbed soil having a greater potential for impacts than smaller areas (Section 5.7.2).
36 The assessment provided in the Draft Solar PEIS remains valid, with the following updates:
37

- 38 • Impacts related to wind erodibility are reduced because the identification of
39 new SEZ boundaries and non-development areas eliminates 9,429 acres
40 (38 km²) of moderately erodible soils, including 195 acres (0.79 km²) of
41 playas, from development.
42
- 43 • Impacts related to water erodibility are reduced because the new SEZ
44 boundaries eliminate 610 acres (2.5 km²) of moderately erodible soils,
45 including 195 acres (0.79 km²) of playas, from development.
46

TABLE 11.3.7.1-1 Summary of Soil Map Units within the Proposed Dry Lake SEZ as Revised

Map Unit Symbol	Map Unit Name	Erosion Potential		Description	Area, in Acres ^c (percentage of SEZ)
		Water ^a	Wind ^b		
CTC	Colorock–Tonopah association, moderately sloping (2 to 8% slopes)	Slight (0.24)	Moderate (WEG 6) ^d	Consists of about 55% Colorock very gravelly clay loam and 40% Tonopah gravelly sandy loam. Nearly level to gently sloping soils on fan remnants. Parent material is calcareous alluvium derived from sedimentary rock. Deep and well to excessively drained, with high surface runoff potential (very slow infiltration rate) and moderate permeability. Available water capacity is low. Moderate rutting hazard. Colorock soils have well-developed pavements. Used mainly as rangeland, forestland, or wildlife habitat; unsuitable for cultivation.	4,064 (65.7) ^e
BRB	Bard–Tonopah association, gently sloping	Slight (0.28)	Moderate (WEG 5)	Consists of about 60% Bard gravelly fine sandy loam and 30% Tonopah gravelly sandy loam. Gently sloping soils on fan remnants. Parent material is alluvium derived from limestone and dolomite. Shallow and deep, well to excessively drained, with high surface runoff potential (very slow infiltration rate) and moderate permeability. Available water capacity is very low. Moderate rutting hazard. Used mainly as rangeland, forestland, or wildlife habitat; unsuitable for cultivation.	1,799 (21.9) ^f
BHC	Bard gravelly fine sandy loam (2 to 8% slopes)	Slight (0.20)	Moderate (WEG 4)	Nearly level to gently sloping soils on fan remnants. Parent material consists of alluvium derived from limestone and dolomite. Moderately deep and well drained, with high surface runoff potential (very slow infiltration rate) and high permeability. Available water capacity is very low. Moderate rutting hazard. Used mainly as rangeland, forestland, or wildlife habitat; unsuitable for cultivation.	160 (2.6)
It	Ireteba loam, overflow	Slight (0.28)	Moderate (WEG 4)	Nearly level soils formed on floodplains. Parent material consists of alluvium derived from mixed sources. Moderately deep and well drained, with moderate surface runoff potential and moderate permeability. Low resistance to compaction. Available water capacity is high. Severe rutting hazard. Used mainly as rangeland, forestland, or wildlife habitat; unsuitable for cultivation.	130 (2.1) ^g

TABLE 11.3.7.1-1 (Cont.)

Map Unit Symbol	Map Unit Name	Erosion Potential		Description	Area, in Acres ^c (percentage of SEZ)
		Water ^a	Wind ^b		
RTF	Rock land–St. Thomas association, very steep	Not rated	Not rated	Consists of about 60% rockland and 30% St. Thomas. Steeply sloping soils on mountain slopes. Parent material is colluvium derived from limestone and dolomite over residuum weathered from limestone and dolomite. Shrink-swell potential is low. Available water capacity is very low. Used mainly as rangeland, forestland, or wildlife habitat; unsuitable for cultivation.	34 (<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.

^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 acres to km², multiply by 0.004047.

^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 m²) per year (average); WEG 2, 134 tons (122 metric tons) per acre (4,000 m²) per year; WEGs 3 and 4 (and 4L), 86 tons (78 metric tons) per acre (4,000 m²) per year; WEG 5, 56 tons (51 metric tons) per acre (4,000 m²) per year; WEG 6, 48 tons (44 metric tons) per acre (4,000 m²) per year; WEG 7, 38 tons (34 metric tons) per acre (4,000 m²) per year; and WEG 8, 0 tons (0 metric tons) per acre (4,000 m²) per year.

^e A total of 47 acres (0.19 km²) within the Colorock–Tonopah association is currently categorized as a non-development area (denoted by red areas in Figure 11.3.7.1-2).

^f A total of 298 acres (1.2 km²) within the Bard–Tonopah association is currently categorized as a non-development area (denoted by red areas in Figure 11.3.7.1-2).

^g A total of 124 acres (0.50 km²) within the Ireteba loam, overflow is currently categorized as a non-development area (denoted by red areas in Figure 11.3.7.1-2).

Source: NRCS (2010).

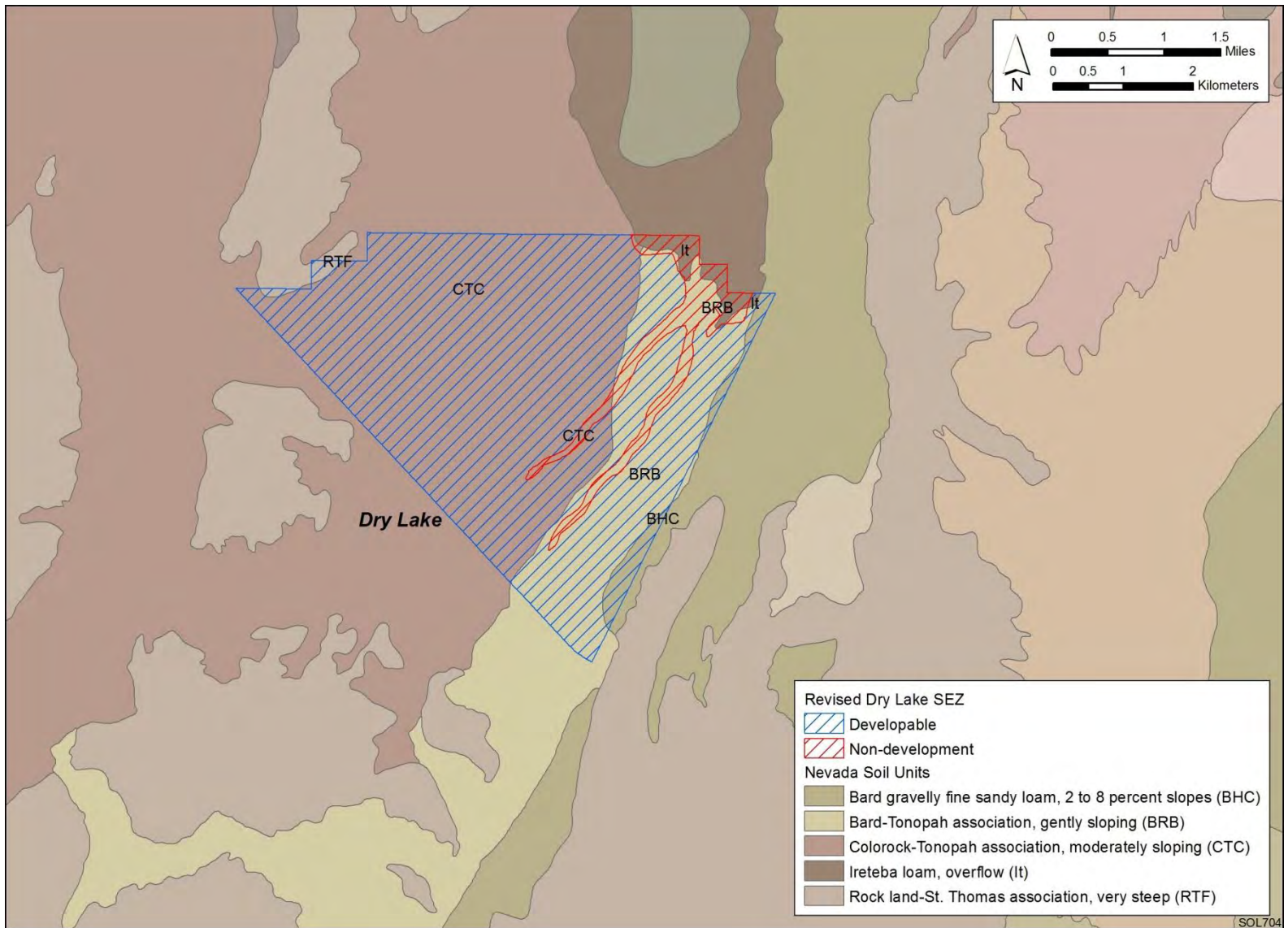


FIGURE 11.3.7.1-2 Soil Map for the Proposed Dry Lake SEZ as Revised (NRCS 2008)

1 **11.3.7.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on soils are described
4 in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design
5 features will reduce the potential for soil impacts during all project phases.
6

7 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
8 analyses due to changes to the SEZ boundaries, and consideration of comments received as
9 applicable, no SEZ-specific design features for soil resources have been identified at the
10 proposed Dry Lake SEZ. Some SEZ-specific design features may be identified through the
11 process of preparing parcels for competitive offer and subsequent project-specific analysis.
12

13
14 **11.3.8 Minerals (Fluids, Solids, and Geothermal Resources)**
15

16 A mineral potential assessment for the proposed Dry Lake SEZ has been prepared and
17 reviewed by BLM mineral specialists knowledgeable about the region where the SEZ is located
18 (BLM 2012a). The BLM is proposing to withdraw the SEZ from settlement, sale, location, or
19 entry under the general land laws, including the mining laws, for a period of 20 years (see
20 Section 2.2.2.2.4 of this Final Solar PEIS). The potential impacts of this withdrawal are
21 discussed in Section 13.3.24.
22

23
24 **11.3.8.1 Affected Environment**
25

26 The active mining claims on two sections of the SEZ discussed in the Draft Solar PEIS
27 are located within the revised SEZ. The mineral processing plant is also still within the SEZ.
28 Data provided in the Draft Solar PEIS remain valid.
29

30
31 **11.3.8.2 Impacts**
32

33 The existing mining claims in the proposed SEZ are prior existing rights and, if they are
34 valid, would likely preclude solar development within the claimed areas. This portion of the SEZ
35 is also encumbered with numerous ROWs, so it is not likely to be utilized for solar development.
36

37
38 **11.3.8.3 SEZ-Specific Design Features and Design Feature Effectiveness**
39

40 Required programmatic design features that would reduce impacts on mineral resources
41 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
42 programmatic design features will provide adequate protection of mineral resources.
43

44 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
45 analyses due to changes to the SEZ boundaries, and consideration of comments received as
46 applicable, no SEZ-specific design features for minerals have been identified in this Final Solar

1 PEIS. Some SEZ-specific design features may be identified through the process of preparing
2 parcels for competitive offer and subsequent project-specific analysis.
3
4

5 **11.3.9 Water Resources**

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7

8 **11.3.9.1 Affected Environment**

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10 The overall size of the Dry Lake SEZ has been reduced by 60% from the area described
11 in the Draft Solar PEIS, resulting in a total area of 6,186 acres (25 km²). The description of the
12 affected environment given in the Draft Solar PEIS relevant to water resources at the proposed
13 Dry Lake SEZ remains valid and is summarized in the following paragraphs.
14

15 The Dry Lake SEZ is within the Lower Colorado–Lake Mead subbasin of the Lower
16 Colorado River Basin hydrologic region. The SEZ is located in Garnet Valley (also called Dry
17 Lake Valley), surrounded by the Arrow Canyon Range to the west and the Dry Lake Range to
18 the southeast. The average precipitation is about 5 in./yr (13 cm/yr), and the estimated pan
19 evaporation rate is approximately 99 in./yr (251 cm/yr). There are no perennial surface water
20 features in the SEZ. Dry Lake is adjacent to the northeastern boundary of the SEZ with 469 acres
21 (1.9 km²) of the dry lake and associated intermittent/ephemeral channels within the SEZ being
22 identified as non-development areas. The revised SEZ boundaries lie outside the 100-year and
23 500-year floodplain areas associated with Dry Lake. The proposed Dry Lake SEZ is part of the
24 Garnet Valley groundwater basin, a basin-fill aquifer covering approximately 342,400 acres
25 (1,386 km²). The basin-fill aquifer consists of unconfined alluvium and lacustrine deposits of
26 sand, silt, and clay, with an average thickness of around 600 ft (183 m). Regional-scale carbonate
27 rock aquifers underlay the basin-fill aquifers in Garnet Valley. These carbonate rock aquifers are
28 a part of the White River Groundwater Flow System (a subunit of the Colorado River
29 groundwater system), a regional-scale groundwater system that generally flows southward and
30 terminates at Muddy River Springs, Rogers and Blue Point Springs, and the Virgin River.
31 Estimates of groundwater recharge are approximately 800 ac-ft/yr (990,000 m³/yr), groundwater
32 elevations are approximately between 230 and 760 ft (70 and 230 m), and groundwater flows
33 from the west to the east in the vicinity of the SEZ. Groundwater quality varies in Garnet Valley,
34 but concentrations of TDS, sulfate, iron, fluoride, manganese, and radon-222 have all been
35 recorded at higher than the MCLs in the area surrounding the SEZ.
36

37 All waters in Nevada are public property and the NDWR is the agency responsible for
38 managing both surface and groundwater resources. The Garnett Valley groundwater basin is a
39 designated groundwater basin, and preferred uses of groundwater include municipal, quasi-
40 municipal, industrial, commercial, mining, stockwater, and wildlife purposes, set up to
41 specifically exclude irrigation. The perennial yield for Garnett Valley is set at 400 ac-ft/yr
42 (490,000 m³/yr), and the basin is currently overappropriated, with approximately 3,400 ac-ft/yr
43 (4.2 million m³/yr) committed for beneficial uses. An additional 44,500 ac-ft/yr (55 million
44 m³/yr) of water right applications are held in abeyance, and no new water right applications are
45 being accepted according to State Engineer’s Order 1169 (NDWR 2002), which calls for further
46 studies on potential impacts from groundwater pumping in Garnett Valley, and several other

1 adjacent valleys, on regional-scale groundwater conditions in the carbonate rock aquifers. Solar
 2 developers would most likely have to purchase and transfer existing water rights in Garnett
 3 Valley, which may be difficult given the overallocated state of the basin and the number of
 4 competing water rights being held in abeyance.

5
 6 In addition to the water resources information provided in the Draft Solar PEIS, this
 7 section provides a planning-level inventory of available climate, surface water, and groundwater
 8 monitoring stations within the immediate vicinity of the Dry Lake SEZ and surrounding basin.
 9 Additional data regarding climate, surface water, and groundwater conditions are presented in
 10 Tables 11.3.9.1-1 through 11.3.9.1-7 and in Figures 11.3.9.1-1 and 11.3.9.1-2. Fieldwork and
 11 hydrologic analyses to determine jurisdictional water bodies would need to be coordinated with
 12 appropriate federal, state, and local agencies. Areas within the Dry Lake SEZ that are determined
 13 to be jurisdictional will be subject to the permitting process described in the CWA.

14
 15
 16 **11.3.9.2 Impacts**

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 19 ***11.3.9.2.1 Land Disturbance Impacts on Water Resources***

20
 21 The discussion of land disturbance effects on water resources in the Draft Solar PEIS
 22 remains valid. As stated in the Draft Solar PEIS, land disturbance impacts in the vicinity of the
 23 proposed Dry Lake SEZ could potentially affect drainage patterns, along with groundwater
 24 recharge and discharge properties. The alteration of natural drainage pathways during
 25 construction can lead to impacts related to flooding, loss of water delivery to downstream
 26 regions, and alterations to riparian vegetation and habitats. The alteration of the SEZ boundaries
 27 to exclude the 100-year floodplain area that included Dry Lake and two intermittent/ephemeral
 28 streams reduces the potential for adverse impacts associated with land disturbance activities.

29
 30
 31 **TABLE 11.3.9.1-1 Watershed and Water Management Basin**
 32 **Information Relevant to the Proposed Dry Lake SEZ as Revised**

Basin	Name	Area (acres) ^b
Subregion (HUC4) ^a	Lower Colorado–Lake Mead (1501)	19,383,151
Cataloging unit (HUC8)	Muddy (15010012)	1,159,401
Groundwater basin	Garnett Valley	101,639
SEZ	Dry Lake SEZ	6,186

^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 km², multiply by 0.004047.

TABLE 11.3.9.1-2 Climate Station Information Relevant to the Proposed Dry Lake 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.)
Desert Game Range, Nevada (262243)	2,920	26	1940–2011	4.50	0.70
Las Vegas NWFO, Nevada (264439)	1,898	17	1996–2011	4.94	0.40
Overton, Nevada (265846)	1,250	26	1939–2011	4.71	0.20
Sunrise Manor Las Vegas, Nevada (267925)	1,821	18	1961–1989	4.28	0.60
Valley of Fire State Park, Nevada (268588)	2,000	21	1972–2011	6.54	0.30

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

^b Surface elevations for the proposed Dry Lake SEZ range from 1,970 to 2,560 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 11.3.9.1-3 Total Lengths of Selected Streams at the Subregion, Cataloging Unit, and SEZ Scale Relevant to the Proposed Dry Lake SEZ as Revised

Water Feature	Subregion, HUC4 (ft) ^a	Cataloging Unit, HUC8 (ft)	SEZ (ft)
Unclassified streams	77,194	9,320	0
Perennial streams	6,478,881	155,849	0
Intermittent/ephemeral streams	440,786,248	24,271,247	108,169
Canals	1,380,645	125,983	0

^a To convert ft to m, multiply by 0.3048.

Source: USGS (2012a).

TABLE 11.3.9.1-4 Stream Discharge Information Relevant to the Proposed Dry Lake SEZ as Revised

Parameter	Station (USGS ID)	
	Dry Lake Tributary near Nellis Air Force Base, Nevada (09417100)	Muddy River at Lewis Avenue at Overton, Nevada (09419507)
Period of record	1964–1975	1998–2010
No. of observations	12	10
Discharge, median (ft ³ /s) ^a	0	94
Discharge, range (ft ³ /s)	0–180	30–1,300
Discharge, most recent observation (ft ³ /s)	4	83
Distance to SEZ (mi) ^b	4	27

^a To convert ft³ to m³, multiply by 0.0283.

^b To convert mi to km, multiply by 1.6093.

Source: USGS (2012b).

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

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TABLE 11.3.9.1-5 Surface Water Quality Data Relevant to the Proposed Dry Lake SEZ as Revised

Parameter	Station (USGS ID) ^a	
	362718114503801	09419507
Period of record	1985	2001–2009
No. of records	1	31
Temperature (°C) ^b	29	20.7 (10.7–25.9)
Total dissolved solids (mg/L)	951	1,120 (902–1,360)
Dissolved oxygen (mg/L)	2	8.3 (7–10.6)
pH	7.3	8.15 (8–8.2)
Total nitrogen (mg/L)	<0.100	0.32 (0.27–0.97)
Phosphorus (mg/L as P)	<0.01	NA
Organic carbon (mg/L)	NA ^c	3 (2.7–4.2)
Calcium (mg/L)	110	109 (79.2–173)
Magnesium (mg/L)	48	53.3 (44.1–69.8)
Sodium (mg/L)	120	174 (141–219)
Chloride (mg/L)	170	116 (100–139)
Sulfate (mg/L)	360	432 (359–577)
Arsenic (µg/L)	NA	30.2 (27.7–46.7)

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

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

^c NA = no data collected for this parameter.

Source: USGS (2012b).

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The study region considered for the intermittent/ephemeral stream evaluation relevant to the Dry Lake SEZ is a subset of the watersheds (HUC8) for which information regarding stream channels is presented in Tables 11.3.9.1-3 and 11.3.9.1-4 of this Final Solar PEIS. The results of the intermittent/ephemeral stream evaluation are shown in Figure 11.3.9.2-1, 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 11.3.9.2-1). The analysis indicated that 36% of total length of the intermittent/ephemeral stream channel reaches in the evaluation had low sensitivity, 63% had moderate sensitivity, and 1% had high sensitivity to land disturbance. Several intermittent/ephemeral channels within the SEZ were classified as having moderate sensitivity to land disturbance.

11.3.9.2.2 Water Use Requirements for Solar Energy Technologies

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Changes in the Dry Lake SEZ 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

1
2

TABLE 11.3.9.1-6 Water Quality Data from Groundwater Samples Relevant to the Proposed Dry Lake SEZ as Revised

Parameter	Station (USGS ID) ^a		
	362329114541401	363308114553001	362507114572701
Period of record	1986	1986	2003
No. of records	1	1	1
Temperature (°C) ^b	24	25	27.2
Total dissolved solids (mg/L)	NA ^c	NA	984
Dissolved oxygen (mg/L)	4.8	3.8	1.9
pH	7.4	7.8	7.2
Nitrate + nitrite (mg/L as N)	0.42	1.9	0.1
Phosphate (mg/L)	< 0.01	0.04	NA
Organic carbon (mg/L)	NA	NA	< 0.3
Calcium (mg/L)	120	33	111
Magnesium (mg/L)	47	30	50.1
Sodium (mg/L)	140	86	106
Chloride (mg/L)	180	64	154
Sulfate (mg/L)	370	90	329
Arsenic (µg/L)	NA	NA	3.1
Radon-222 (pCi/L)	NA	NA	26

^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 (2012b).

3

4

5 simplified, one-dimensional groundwater model of potential groundwater drawdown. Only a
6 summary of the results from these groundwater analyses is presented in this section; more
7 information on methods and results is presented in Appendix O.

8

9

10 Table 11.3.9.2-1 presents the revised estimates of water requirements for both
11 construction and operation of solar facilities at the proposed Dry Lake SEZ assuming full build-
12 out of the SEZ and accounting for its decreased size. A basin-scale groundwater budget was
13 assembled using available data on groundwater inputs, outputs, and storage, with results
14 presented in Table 11.3.9.2-2.

14

15

16 The estimated total water use requirements during the peak construction year are as high
17 as 1,740 ac-ft/yr (2.1 million m³/yr), which is more than two times the estimated annual inputs
18 to the basin and is on par with the current groundwater withdrawals in the Garnet Valley Basin.
19 Given the short duration of construction activities, the water use estimate for construction is not
20 a primary concern to water resources in the basin. The long duration of groundwater pumping
21 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

TABLE 11.3.9.1-7 Groundwater Surface Elevations Relevant to the Proposed Dry Lake SEZ as Revised

Parameter	Station (USGS ID)			
	362318114545801	362329114541401	362417114525601	362531114524201
Period of record	1963–1990	1971	1985	1956
No. of observations	3	1	1	1
Surface elevation (ft) ^a	2,211	2,170	2,200	2,045
Well depth (ft)	300	500	NA ^d	793
Depth to water, median (ft)	233	338	392	226
Depth to water, range (ft)	230–250	– ^c	–	–
Depth to water, most recent observation (ft)	250	338	391.94	226.4
Distance to SEZ (mi) ^b	2	2	1	1

^a To convert ft to m, multiply by 0.3048.

^b To convert mi to km, multiply by 1.6093.

^c A dash indicates only one data point at this site.

^d NA = data not available.

Source: USGS (2012b).

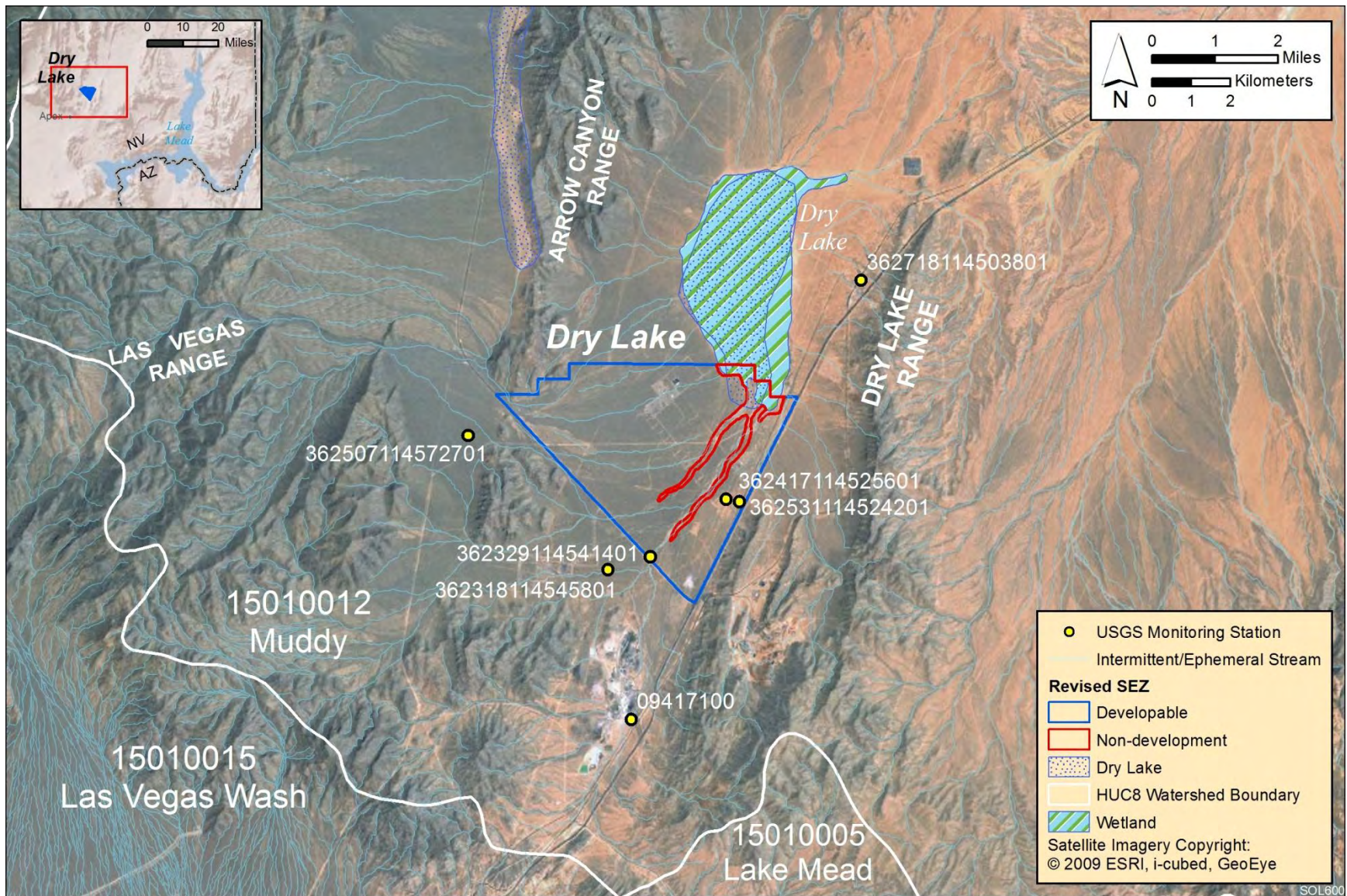


FIGURE 11.3.9.1-1 Water Features near the Proposed Dry Lake SEZ as Revised

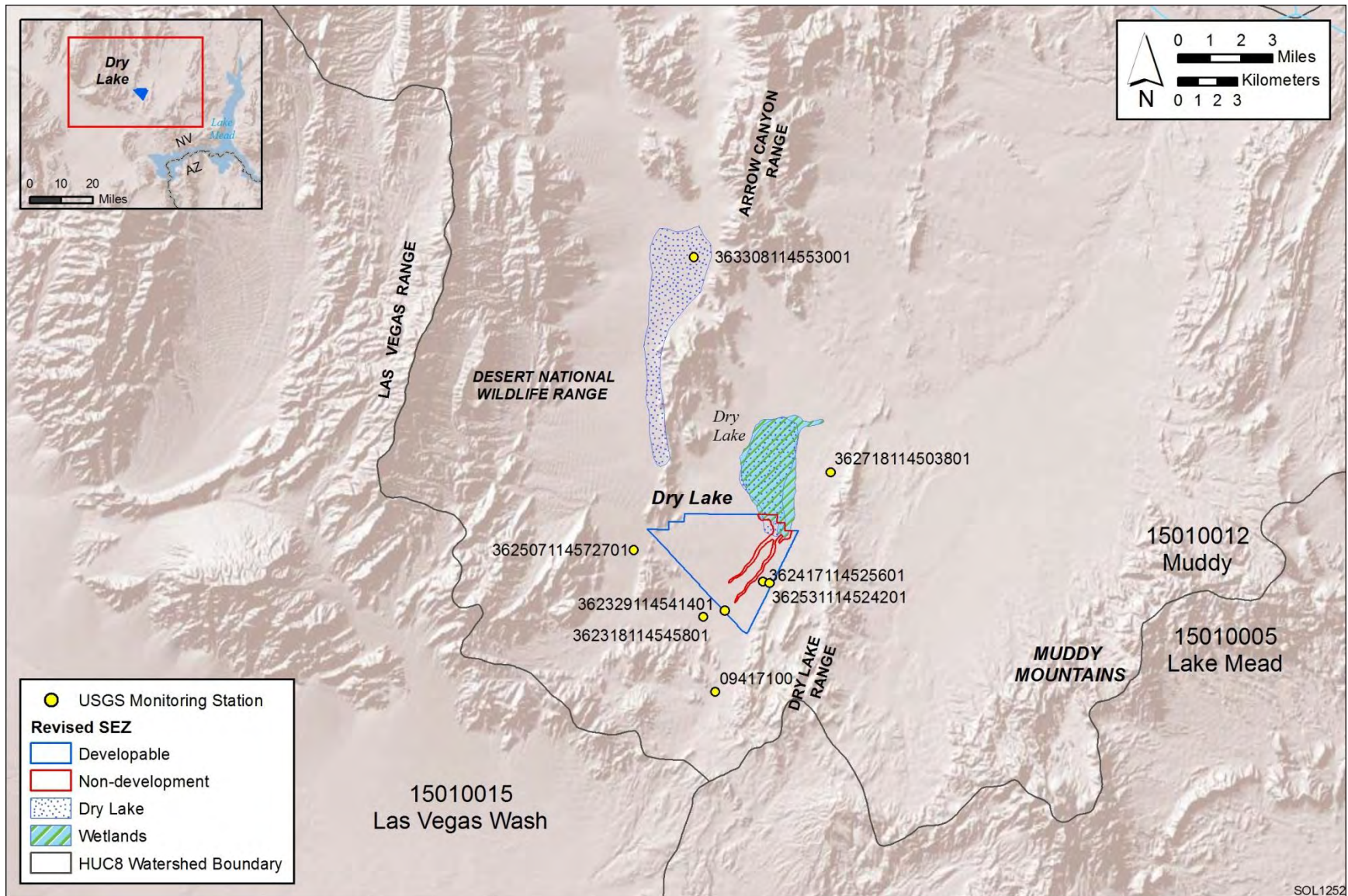


FIGURE 11.3.9.1-2 Water Features within the Muddy River Watershed, Which Includes the Proposed Dry Lake SEZ as Revised

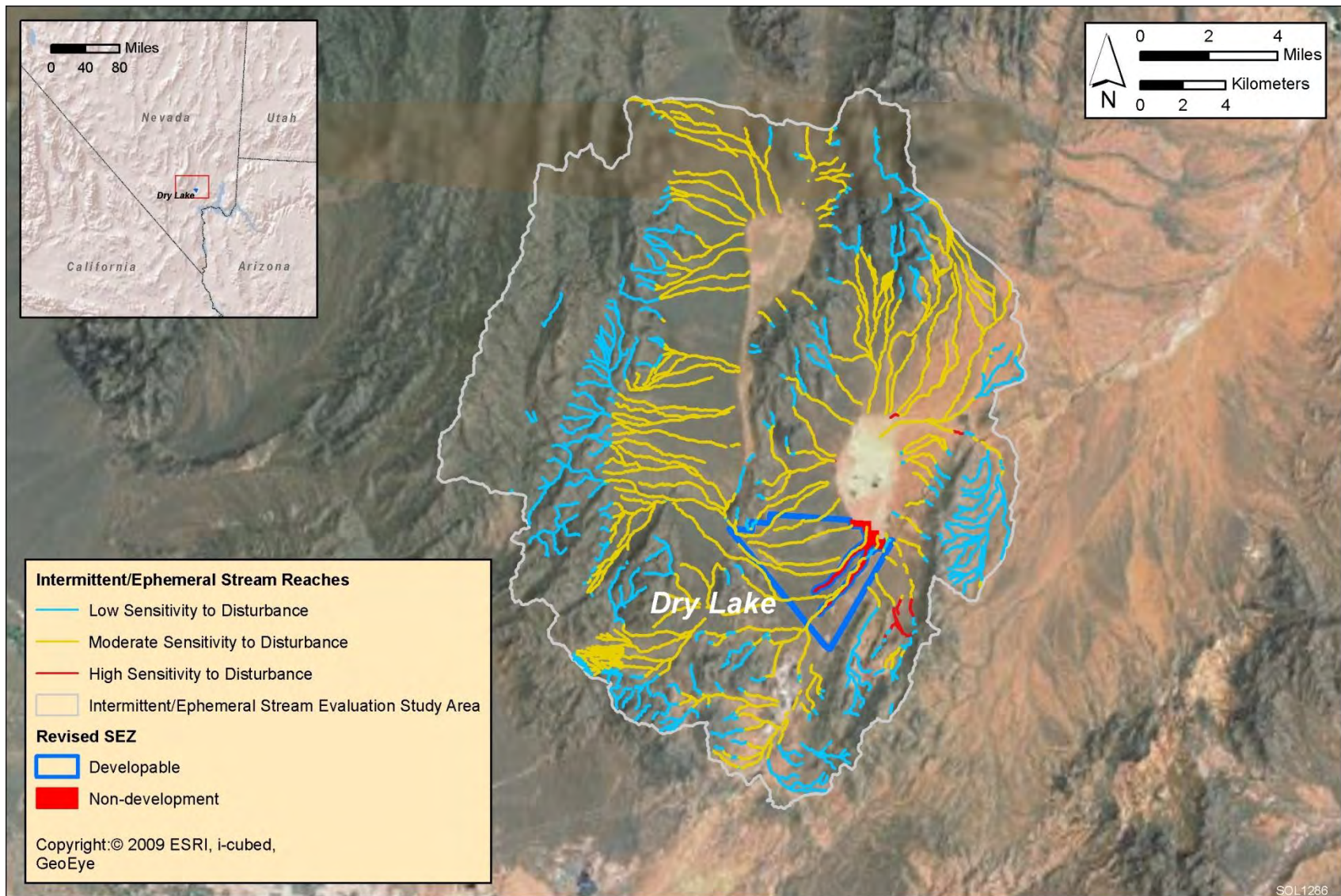


FIGURE 11.3.9.2-1 Intermittent/Ephemeral Stream Channel Sensitivity to Surface Disturbances in the Vicinity of the Proposed Dry Lake SEZ as Revised

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TABLE 11.3.9.2-1 Estimated Water Requirements for the Proposed Dry Lake SEZ as Revised^a

Activity	Parabolic Trough	Power Tower	Dish Engine	PV
Construction—Peak Year				
<i>Water use requirements</i>				
Fugitive dust control (ac-ft) ^b	1,130	1,695	1,695	1,695
Potable supply for workforce (ac-ft)	74	45	19	9
Total water use requirements (ac-ft)	1,204	1,740	1,714	1,704
<i>Wastewater generated</i>				
Sanitary wastewater (ac-ft)	74	45	19	9
Operations				
<i>Water use requirements</i>				
Mirror/panel washing (ac-ft/yr)	457	254	254	25
Potable supply for workforce (ac-ft/yr)	13	6	6	<1
Dry cooling (ac-ft/yr)	183–915	102–508	NA	NA
Wet cooling (ac-ft/yr)	4,116–13,263	2,287–7,369	NA	NA
<i>Total water use requirements</i>				
Non-cooled technologies (ac-ft/yr)	NA ^c	NA	260	25
Dry-cooled technologies (ac-ft/yr)	653–1,385	362–768	NA	NA
Wet-cooled technologies (ac-ft/yr)	4,586–13,733	2,547–7,629	NA	NA
<i>Wastewater generated</i>				
Blowdown (ac-ft/yr)	260	144	NA	NA
Sanitary wastewater (ac-ft/yr)	13	6	6	<1

^a See Section M.9.2 of Appendix M of the Draft Solar PEIS for methods used in estimating water use requirements.

^b To convert ac-ft to m³, multiply by 1,234.

^c NA = not applicable.

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of the SEZ assuming PV, dry-cooled parabolic trough, and wet-cooled parabolic trough, respectively (a 30% operational time was considered for all the solar facility types on the basis of operations estimates for recently proposed utility-scale solar energy facilities).

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The low, medium, and high pumping scenarios result in groundwater withdrawals that range from 26 to 4,586 ac-ft/yr (0.032 to 5.7 million m³/yr), or 520 to 91,720 ac-ft (0.64 to 113 million m³) over the 20-year operational period. From a groundwater budgeting perspective, the high pumping scenario would represent 5.7 times the estimated total annual groundwater inputs to the basin and more than 9% of the estimated groundwater storage in the Garnet Valley Basin over the 20-year operational period. In addition, the average annual groundwater outputs from the basin can be more than 2 times the groundwater inputs to the basin. The low and medium pumping scenarios have annual withdrawals that represent 3% and 82%, respectively,

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TABLE 11.3.9.2-2 Groundwater Budget for the Garnet Valley Groundwater Basin, Which Includes the Proposed Dry Lake SEZ as Revised

Process	Amount
<i>Inputs</i>	
Recharge (ac-ft/yr) ^{a,b}	400
Underflow from Hidden Valley (ac-ft/yr)	400
<i>Outputs</i>	
Underflow to California Wash basin (ac-ft/yr)	800
Total withdrawals (ac-ft/yr)	800–1,600 ^c
<i>Storage</i>	
Aquifer storage (ac-ft)	1,000,000 ^d
Perennial yield (ac-ft/yr)	400 ^e

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

^b To convert ac-ft to m³, multiply by 1,234.

^c Water use varies by year and is primarily for mining and industrial use (NDWR 2010a,b).

^d Burbey (1997).

^e Defined by NDWR.

Source: Rush (1968).

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6 of the estimate of groundwater inputs to the basin (Table 11.3.9.2-2). Increases in groundwater
7 extraction from the basin could impair other users and affect ecological habitats.

8

9

10 Groundwater budgeting allows for quantification of complex groundwater processes at
11 the basin scale, but it ignores the temporal and spatial components of how groundwater
12 withdrawals affect groundwater surface elevations, groundwater flow rates, and connectivity
13 to surface water features such as streams, wetlands, playas, and riparian vegetation. A one-
14 dimensional groundwater modeling analysis was performed to present a simplified depiction
15 of the spatial and temporal effects of groundwater withdrawals by examining groundwater
16 drawdown in a radial direction around the center of the SEZ for the low, medium, and high
17 pumping scenarios. A detailed discussion of the groundwater modeling analysis is presented
18 in Appendix O. It should be noted, however, that the aquifer parameters used for the
19 one dimensional groundwater model (Table 11.3.9.2-3) represent available literature data, and
20 that the model aggregates these value ranges into a simplistic representation of the aquifer.

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22 Currently, the depth to groundwater ranges between 226 and 392 ft (69 and 119 m) in
the vicinity of the SEZ (Table 11.3.9.1-7). The modeling results suggest that groundwater

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TABLE 11.3.9.2-3 Aquifer Characteristics and Assumptions Used in the One-Dimensional Groundwater Model for the Proposed Dry Lake SEZ as Revised

Parameter	Value
Aquifer type/conditions	Basin fill/unconfined
Aquifer thickness (ft)	1,640 ^b
Hydraulic conductivity (ft/day)	1 ^c
Transmissivity (ft ² /day)	1,640
Specific yield	0.1 ^c
Analysis period (yr)	20
High pumping scenario (ac-ft/yr) ^a	4,586
Medium pumping scenario (ac-ft/yr)	653
Low pumping scenario (ac-ft/yr)	26

- ^a To convert ac-ft to m³, multiply by 1,234.
- ^b Source: Freeze and Cherry (1979).
- ^c Source: Rush (1968).

withdrawals for solar energy development would result in groundwater drawdown in the vicinity of the SEZ (approximately a 2-mi [3.2-km] radius) that ranges from 17 to more than 75 ft (5.1 to 23 m) for the high pumping scenario, 2.4 to 12 ft (0.7 to 4 m) for the medium pumping scenario, and less than 1 ft (0.3 m) for the low pumping scenario (Figure 11.3.9.2-2). 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 Dry Lake and the riparian vegetation along the unnamed intermittent/ephemeral streams along the eastern edge of the SEZ that are within the 100-year floodplain.

11.3.9.2.3 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 11.3.9.2-2 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 SEZ as Revised

11.3.9.2.4 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 proposed Dry Lake SEZ is located in a desert valley with predominately intermittent/ephemeral surface water features and groundwater in a basin-fill aquifer overlaying a regional-scale carbonate rock aquifer system. Historical groundwater use in the region has led to groundwater declines of approximately 20 ft (6 m) from the 1950s to the 1980s. The NDWR set the perennial yield for the Garnet Valley to 400 ac-ft/yr (490,000 m³/yr), and the basin is currently overappropriated with approximately 3,400 ac-ft/yr (4.2 million m³/yr) committed for beneficial uses. An additional 44,500 ac-ft/yr (55 million m³/yr) of water right applications are held in abeyance, and no new water right applications are being accepted. These baseline conditions suggest that water resources are scarce in the vicinity of the Dry Lake 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 proposed Dry Lake SEZ and the designation of non-development areas within the 100-year floodplain resulted in a decrease in total water demand by approximately 60% for all technologies (Table 11.3.9.2-1). The areas excluded from the SEZ contain the Dry Lake and the associated wetlands adjacent to the northeast corner of the SEZ as revised, and the area of the 100-year floodplain associated with the unnamed washes along the eastern edge of the SEZ. These changes in the SEZ boundaries have reduced potential impacts associated with groundwater withdrawals and surface disturbance on surface water features.

Disturbance to intermittent/ephemeral stream channels within the Dry Lake SEZ could pose an impact on the critical functions of groundwater recharge, sediment transport, flood

1 conveyance, and ecological habitat in the vicinity of the SEZ. The intermittent/ephemeral stream
2 evaluation suggests that several intermittent/ephemeral channels within the SEZ have a moderate
3 sensitivity to disturbance. Surface disturbances within the Dry Lake SEZ could also lead to
4 impacts within upstream and downstream reaches of unnamed intermittent/ephemeral streams
5 that flow through the SEZ. Several programmatic design features described in Section A.2.2 of
6 Appendix A of this Final Solar PEIS describe measures to protect and mitigate for impacts on
7 intermittent/ephemeral water features.
8

9 The proposed water use for full-build out scenarios at the Dry Lake SEZ indicate that the
10 low pumping scenario is preferable, given that the medium and high pumping scenarios have the
11 potential to greatly affect both the annual and long-term groundwater budget, and that the high
12 pumping scenario may impair potential groundwater-surface water connectivity in Dry Lake and
13 the unnamed intermittent/ephemeral streams along the eastern edge of the SEZ. The availability
14 of groundwater in the Garnet Valley basin for solar development will largely depend on water
15 rights availability and decisions made by the NDWR.
16

17 Predicting impacts associated with groundwater withdrawals in desert regions is often
18 difficult given the heterogeneity of aquifer characteristics, the long time period between the onset
19 of pumping and its effects, and limited data. One of the primary mitigation measures to protect
20 water resources is the implementation of long-term monitoring and adaptive management (see
21 Section A.2.4 of Appendix A). For groundwater, this requires the combination of monitoring and
22 modeling to fully identify the temporal and spatial extent of potential impacts. The BLM is
23 currently working on the development of a more detailed numerical groundwater model for the
24 Dry Lake SEZ, which would more accurately predict potential impacts on surface water features
25 and groundwater drawdown. When the detailed model is completed, it will be made available
26 through the project Web site (<http://solareis.anl.gov>) for use by applicants, the BLM, and other
27 stakeholders.
28
29

30 **11.3.9.3 SEZ-Specific Design Features and Design Feature Effectiveness**

31

32 Required programmatic design features that would reduce impacts on surface water
33 and groundwater are described in Section A.2.2 of Appendix A of this Final Solar PEIS.
34 Implementing the programmatic design features will provide some protection of and reduce
35 impacts on water resources.
36

37 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
38 analyses due to changes to the SEZ boundaries, and consideration of comments received as
39 applicable, the following SEZ-specific design feature has been identified:
40

- 41 • Groundwater analyses suggest that full build-out of dry-cooled and wet-
42 cooled technologies is not feasible; for mixed-technology development
43 scenarios, any proposed dry- or wet-cooled projects should utilize water
44 conservation practices.
45

1 The need for additional SEZ-specific design features will be identified through the
2 process of preparing parcels for competitive offer and subsequent project-specific analysis.
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5 **11.3.10 Vegetation**

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8 **11.3.10.1 Affected Environment**

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10 Revisions to the boundaries of the proposed Dry Lake SEZ have eliminated a large
11 portion of the wetland mapped by the NWI and playa in the SEZ. In addition, 469 acres
12 (2 km²), consisting of the remaining area of wetland and playa within the SEZ as well as the
13 two predominant washes inflowing from the south, were identified as non-development areas.
14

15 As presented in Section 11.3.10.1 of the Draft Solar PEIS, 6 cover types were identified
16 within the area of the proposed Dry Lake SEZ, while 12 cover types were identified in the area
17 of indirect impacts. Sensitive habitats on the SEZ include desert chenopod scrub/mixed salt
18 desertscrub, desert dry washes, dry wash woodland, wetland, and playa. A characteristic species
19 of the Mojave Desert that is present on the SEZ is Mojave yucca (*Yucca schidigera*). Because of
20 the SEZ boundary changes, the North American Warm Desert Playa cover type no longer occurs
21 within the SEZ. Figure 11.3.10.1-1 shows the cover types within the affected area of the Dry
22 Lake SEZ as revised.
23
24

25 **11.3.10.2 Impacts**

26

27 As presented in the Draft Solar PEIS, the construction of solar energy facilities within the
28 proposed Dry Lake SEZ would result in direct impacts on plant communities because of the
29 removal of vegetation within the facility footprint during land-clearing and land-grading
30 operations. Approximately 80% of the SEZ would be expected to be cleared with full
31 development of the SEZ. As a result of the changes to the proposed SEZ boundaries,
32 approximately 4,574 acres (19 km²) would be cleared.
33

34 Overall impact magnitude categories were based on professional judgment and include
35 (1) *small*: a relatively small proportion ($\leq 1\%$) of the cover type within the SEZ region would be
36 lost; (2) *moderate*: an intermediate proportion (> 1 but $\leq 10\%$) of a cover type would be lost; and
37 (3) *large*: $> 10\%$ of a cover type would be lost.
38
39

40 **11.3.10.2.1 Impacts on Native Species**

41

42 The analysis presented in the Draft Solar PEIS for the original Dry Lake SEZ
43 boundaries indicated that development would result in a moderate impact on one land cover type
44 and a small impact on all other land cover types occurring within the SEZ (Table 11.3.10.1-1 in
45 the Draft Solar PEIS). Development within the revised Dry Lake SEZ could still directly affect
46

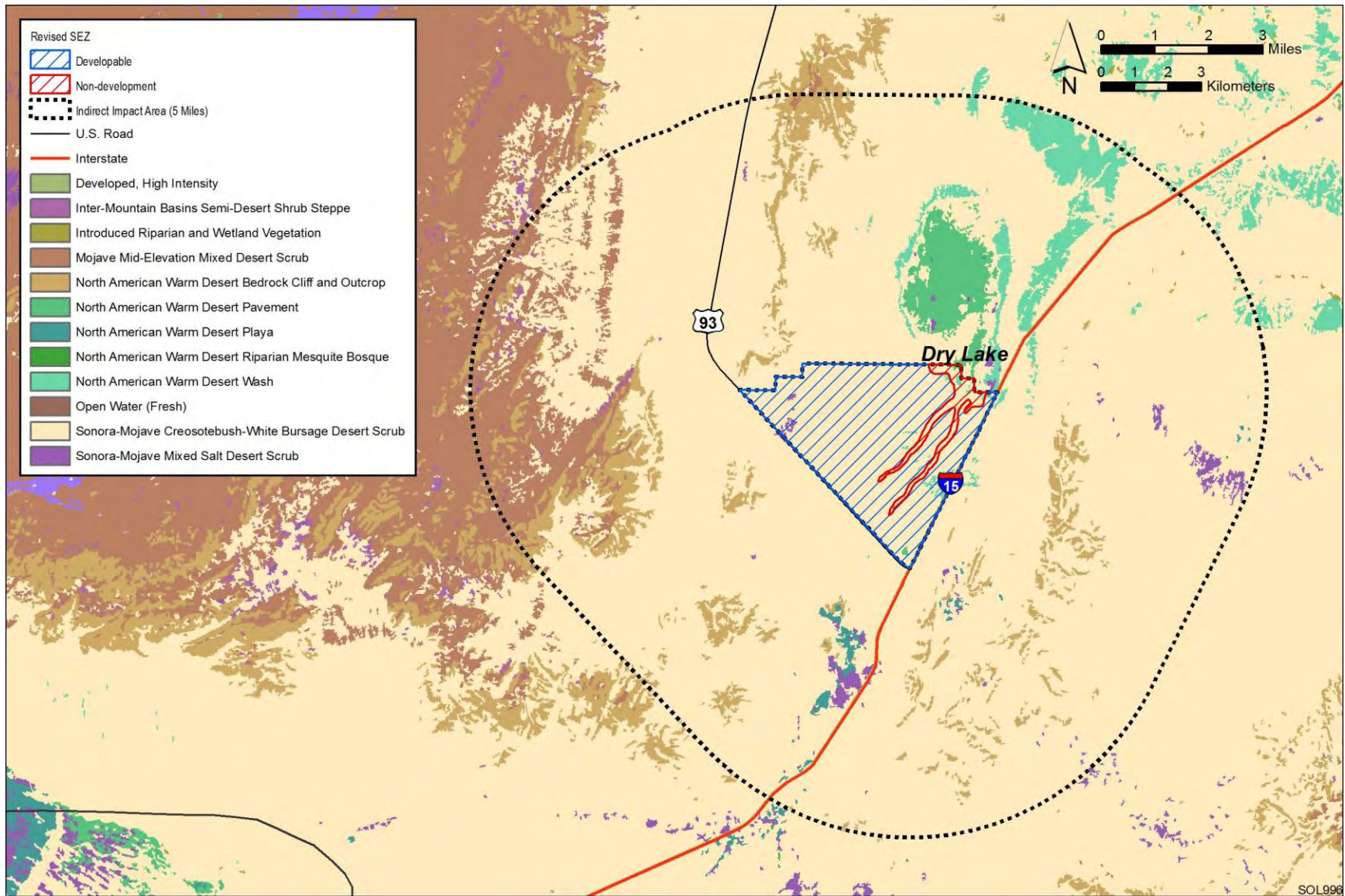


FIGURE 11.3.10.1-1 Land Cover Types within the Proposed Dry Lake SEZ as Revised

1 most of the cover types evaluated in the Draft Solar PEIS, with the exception of North American
2 Warm Desert Playa. The reduction in the developable area would result in reduced impact levels
3 on all cover types in the affected area. The impact magnitude for North American Warm Desert
4 Pavement would change from moderate to small. The impact magnitudes for all other land cover
5 types would remain unchanged compared to original estimates in the Draft Solar PEIS.
6

7 Indirect impacts on habitats associated with Dry Lake playa within or near the SEZ, as
8 described in the Draft Solar PEIS, could occur. The indirect impacts from groundwater use, on
9 plant communities in the region that depend on groundwater, could also occur.
10

11 ***11.3.10.2 Impacts from Noxious Weeds and Invasive Plant Species***

12 As presented in the Draft Solar PEIS, land disturbance from project activities and indirect
13 effects of construction and operation within the Dry Lake SEZ could potentially result in the
14 establishment or expansion of noxious weeds and invasive species populations, potentially
15 including those species listed in Section 11.3.10.1 of the Draft Solar PEIS. Impacts, such as
16 reduced restoration success and possible widespread habitat degradation, could still occur;
17 however, a small reduction in the potential for such impacts would result from the reduced
18 developable area of the SEZ.
19
20

21 **11.3.10.3 SEZ-Specific Design Features and Design Feature Effectiveness**

22 Required programmatic design features are described in Section A.2.2 of Appendix A
23 of this Final Solar PEIS. SEZ-specific species and habitats will determine how programmatic
24 design features are applied, for example:
25

- 26 • All dry wash, dry wash woodland, and chenopod scrub communities within
27 the SEZ shall be avoided to the extent practicable, and any impacts minimized
28 and mitigated in consultation with appropriate agencies. Any yucca, cacti, or
29 succulent plant species that cannot be avoided should be salvaged. A buffer
30 area shall be maintained around dry wash, dry wash woodland, playa, and
31 wetland habitats to reduce the potential for impacts.
32
- 33 • Appropriate engineering controls shall be used to minimize impacts on dry
34 wash, dry wash woodland, wetland, and playa habitats, including downstream
35 occurrences, resulting from surface water runoff, erosion, sedimentation,
36 altered hydrology, accidental spills, or fugitive dust deposition. Appropriate
37 buffers and engineering controls will be determined through agency
38 consultation.
39
- 40 • Groundwater withdrawals shall be limited to reduce the potential for indirect
41 impacts on groundwater-dependent communities, such as mesquite
42 communities. Potential impacts on springs shall be determined through
43 hydrological studies.
44
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1 It is anticipated that implementation of these programmatic design features will reduce a
2 high potential for impacts from invasive species and impacts on dry wash, dry wash woodland,
3 chenopod scrub, mesquite bosque, riparian, wetland, and playa communities and springs to a
4 minimal potential for impact. Residual impacts on groundwater dependent habitats could result
5 from limiting groundwater withdrawal, and so forth; however, it is anticipated that these impacts
6 would be avoided in the majority of instances.

7
8 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
9 analyses due to changes to the SEZ boundaries, and consideration of comments received as
10 applicable, no SEZ-specific design features for vegetation have been identified. Some SEZ-
11 specific design features may be identified through the process of preparing parcels for
12 competitive offer and subsequent project-specific analysis.

15 **11.3.11 Wildlife and Aquatic Biota**

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

24 **11.3.11.1 Amphibians and Reptiles**

27 **11.3.11.1.1 Affected Environment**

29 As presented in Section 11.3.11.1 of the Draft Solar PEIS, representative amphibian and
30 reptile species expected to occur within the Dry Lake SEZ include the Great Plains toad (*Bufo*
31 *cognatus*), red-spotted toad (*Bufo punctatus*), desert horned lizard (*Phrynosoma platyrhinos*),
32 Great Basin collared lizard (*Crotaphytus bicinctores*), long-nosed leopard lizard (*Gambelia*
33 *wislizenii*), side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus*
34 *occidentalis*), western whiptail (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus*
35 *draconoides*), coachwhip (*Masticophis flagellum*), common kingsnake (*Lampropeltis getula*),
36 glossy snake (*Arizona elegans*), gophersnake (*Pituophis catenifer*), groundsnake (*Sonora*
37 *semiannulata*), long-nosed snake (*Rhinocheilus lecontei*), nightsnake (*Hypsiglena torquata*),
38 Mojave rattlesnake (*Crotalus scutulatus*), and sidewinder (*Crotalus cerastes*). The reduction in
39 the size of the Dry Lake SEZ does not alter the potential for these species to occur in the affected
40 area.

43 **11.3.11.1.2 Impacts**

45 As presented in the Draft Solar PEIS, solar energy development within the Dry Lake SEZ
46 could affect potentially suitable habitats for the representative amphibian and reptile species. The

1 analysis presented in the Draft Solar PEIS for the original Dry Lake SEZ boundaries indicated
2 that development would result in a small overall impact on all representative amphibian and
3 reptile species (Table 11.3.11.1-1 in the Draft Solar PEIS). The reduction in the developable area
4 of the Dry Lake SEZ would result in reduced habitat impacts for all representative amphibian
5 and reptile species; the resultant impact levels for all of the representative species would still be
6 small.

9 **11.3.11.1.3 SEZ-Specific Design Features and Design Feature Effectiveness**

10 Required programmatic design features are described in Section A.2.2 of Appendix A
11 of this Final Solar PEIS. With the implementation of required programmatic design features,
12 impacts on amphibian and reptile species are anticipated to be small.

13
14 Because of the changes to the SEZ boundaries, the SEZ-specific design feature identified
15 in Section 11.3.11.1.3 of the Draft Solar PEIS (i.e., dry lake and wash habitats should be
16 avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar
17 PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of
18 comments received as applicable, no SEZ-specific design features for amphibians and reptiles
19 have been identified. Some SEZ-specific design features may be identified through the process
20 of preparing parcels for competitive offer and subsequent project-specific analysis.
21

22 23 24 **11.3.11.2 Birds**

25 26 27 **11.3.11.2.1 Affected Environment**

28
29 As presented in Section 11.3.11.2.1 of the Draft Solar PEIS, a large number of bird
30 species could occur or have potentially suitable habitat within the affected area of the proposed
31 Dry Lake SEZ. Representative bird species identified in the Draft Solar PEIS included
32 (1) shorebirds: killdeer (*Charadrius vociferus*); (2) passerines: ash-throated flycatcher
33 (*Myiarchus cinerascens*), Bewick's wren (*Thryomanes bewickii*), black-tailed gnatcatcher
34 (*Polioptila melanura*), black-throated sparrow (*Amphispiza bilineata*), common poorwill
35 (*Phalaenoptilus nuttallii*), common raven (*Corvus corax*), Costa's hummingbird (*Calypte*
36 *costae*), crissal thrasher (*Toxostoma crissale*), greater roadrunner (*Geococcyx californianus*),
37 horned lark (*Eremophila alpestris*), ladder-backed woodpecker (*Picoides scalaris*), Le Conte's
38 thrasher (*Toxostoma lecontei*), lesser nighthawk (*Chordeiles acutipennis*), loggerhead shrike
39 (*Lanius ludovicianus*), Lucy's warbler (*Vermivora luciae*), northern mockingbird (*Mimus*
40 *polyglottos*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza belli*), Say's phoebe
41 (*Sayornis saya*), verdin (*Auriparus flaviceps*), and western kingbird (*Tyrannus verticalis*);
42 (3) raptors: American kestrel (*Falco sparverius*), golden eagle (*Aquila chrysaetos*), great horned
43 owl (*Bubo virginianus*), long-eared owl (*Asio otus*), red-tailed hawk (*Buteo jamaicensis*), and
44 turkey vulture (*Cathartes aura*); and (4) upland gamebirds: chukar (*Alectoris chukar*), Gambel's
45 quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*), and white-winged dove

1 (*Zenaida asiatica*). The reduction in the size of the Dry Lake SEZ does not alter the potential for
2 these species or other bird species to occur in the affected area.
3
4

5 **11.3.11.2.2 Impacts**

6

7 As presented in the Draft Solar PEIS, solar energy development within the Dry Lake SEZ
8 could affect potentially suitable bird habitats. The analysis presented in the Draft Solar PES
9 based on the original Dry Lake SEZ boundaries indicated that development would result in a
10 small overall impact on all representative bird species (Table 11.3.11.2-1 in the Draft Solar
11 PEIS). The reduction in the developable area of the Dry Lake SEZ would result in reduced
12 habitat impacts for all representative bird species; however, the resultant impact levels for all of
13 the representative bird species would still be small.
14
15

16 **11.3.11.2.3 SEZ-Specific Design Features and Design Feature Effectiveness**

17

18 Required programmatic design features are described in Section A.2.2 of Appendix A
19 of this Final Solar PEIS. With the implementation of required programmatic design features,
20 impacts on bird species are anticipated to be small.
21

22 Because of the change in boundaries of the SEZ, the SEZ-specific design feature
23 identified in Section 11.3.11.2.3 of the Draft Solar PEIS (i.e., dry lake and wash habitats should
24 be avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft
25 Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration
26 of comments received as applicable, no SEZ-specific design features for birds have been
27 identified. Some SEZ-specific design features may be identified through the process of preparing
28 parcels for competitive offer and subsequent project-specific analysis.
29
30

31 **11.3.11.3 Mammals**

32
33

34 **11.3.11.3.1 Affected Environment**

35

36 As presented in Section 11.3.11.3.1 of the Draft Solar PEIS, a large number of mammal
37 species were identified that could occur or have potentially suitable habitat within the affected
38 area of the proposed Dry Lake SEZ. Representative mammal species identified in the Draft
39 Solar PEIS included (1) big game species: cougar (*Puma concolor*) and mule deer (*Odocoileus*
40 *hemionus*); (2) furbearers and small game species: the American badger (*Taxidea taxus*), black-
41 tailed jackrabbit (*Lepus californicus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*, common),
42 desert cottontail (*Sylvilagus audubonii*), gray fox (*Urocyon cinereoargenteus*), kit fox (*Vulpes*
43 *macrotis*), and red fox (*Vulpes vulpes*); and (3) small nongame species: Botta's pocket gopher
44 (*Thomomys bottae*), cactus mouse (*Peromyscus eremicus*), canyon mouse (*P. crinitis*), deer
45 mouse (*P. maniculatus*), desert kangaroo rat (*Dipodomys deserti*), desert shrew (*Notiosorex*
46 *crawfordi*), desert woodrat (*Neotoma lepida*), little pocket mouse (*Perognathus longimembris*),

1 long-tailed pocket mouse (*Chaetodipus formosus*), Merriam's pocket mouse (*Dipodomys*
2 *merriami*), northern grasshopper mouse (*Onychomys leucogaster*), southern grasshopper mouse
3 (*O. torridus*), western harvest mouse (*Reithrodontomys megalotis*), and white-tailed antelope
4 squirrel (*Ammospermophilus leucurus*). Bat species that may occur within the area of the SEZ
5 include the big brown bat (*Eptesicus fuscus*), Brazilian free-tailed bat (*Tadarida brasiliensis*),
6 California myotis (*Myotis californicus*), hoary bat (*Lasiurus cinereus*), long-legged myotis
7 (*M. volans*), silver-haired bat (*Lasionycteris noctivagans*), and western pipistrelle (*Parastrellus*
8 *hesperus*). The reduction in the size of the Dry Lake SEZ does not alter the potential for these
9 species or any additional mammal species to occur in the affected area.

11.3.11.3.2 Impacts

14 As presented in the Draft Solar PEIS, solar energy development within the Dry Lake
15 SEZ could affect potentially suitable habitats of mammal species. The analysis presented in the
16 Draft Solar PEIS based on the original Dry Lake SEZ boundaries indicated that development
17 would result in a small overall impact on all representative mammal species analyzed
18 (Table 11.3.11.3-1 in the Draft Solar PEIS). The reduction in the developable area of the Dry
19 Lake SEZ would result in reduced habitat impacts for all representative mammal species;
20 resultant impact levels for all of the representative mammal species would still be small.

11.3.11.3.3 SEZ-Specific Design Features and Design Feature Effectiveness

25 Required programmatic design features that would reduce impacts on mammals are
26 described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of
27 required programmatic design features and the applicable SEZ-specific design features, impacts
28 on mammal species will be reduced.

30 Because of the change in boundaries of the SEZ, one of the SEZ-specific design features
31 identified in Section 11.3.11.3.3 of the Draft Solar PEIS (i.e., playa and wash habitats should be
32 avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar
33 PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of
34 comments received as applicable, the following SEZ-specific design feature has been identified:

- 36 • To the extent practicable, the fencing around the solar energy development
37 should not block the free movement of mammals, particularly big game
38 species.

40 If this SEZ-specific design feature is implemented in addition to required programmatic
41 design features, impacts on mammal species are anticipated to be small. The need for additional
42 SEZ-specific design features may be identified through the process of preparing parcels for
43 competitive offer and subsequent project-specific analysis.

1 **11.3.11.4 Aquatic Biota**

2
3
4 **11.3.11.4.1 Affected Environment**

5
6 There are no perennial surface water bodies, wetlands, or streams within the proposed
7 Dry Lake SEZ. The boundaries of the Dry Lake SEZ have been reduced compared to the
8 boundaries given in the Draft Solar PEIS. On the basis of these changes, updates to the Draft
9 Solar PEIS include:

- 10
11 • Approximately 218 acres (1 km²) of Dry Lake are located within the SEZ.
12 However, only 74 acres (<1 km²) are located within a development area.
13
14 • There are 3,507 acres (14 km²) of dry lakes present in the area of indirect
15 effects within 5 mi (8 km) of the SEZ, along with associated wetlands.
16 Portions of two intermittent streams (California Wash and Gypsum Wash)
17 totaling 3 mi (5 km) are present within the area of indirect effects (within 5 mi
18 [8 km] of the SEZ).
19
20 • Outside of the potential indirect effects area but within 50 mi (80 km) of the
21 SEZ, there are 130,098 acres (526 km²) of permanent lake (Lake Mead),
22 12,030 acres (49 km²) of the Colorado River, and 44,410 (180 km²) of dry
23 lake. There are also several stream features, including 125 mi (201 km) of
24 perennial streams and 273 mi (439 km) of intermittent streams.
25

26 There is no information on aquatic biota in the surface water features in the SEZ. As
27 stated in Appendix C of the Supplement to the Draft Solar PEIS, site surveys can be conducted
28 at the project-specific level to characterize the aquatic biota, if present.
29

30
31 **11.3.11.4.2 Impacts**

32
33 The types of impacts on aquatic habitats and biota that could occur from development of
34 utility-scale solar energy facilities are discussed in Section 5.10.3 of the Draft and Final Solar
35 PEIS. Aquatic habitats, including wetland areas, present on or near the Dry Lake SEZ could be
36 affected by solar energy development in a number of ways, including (1) direct disturbance,
37 (2) deposition of sediments, (3) changes in water quantity, and (4) degradation of water quality.
38 The impact assessment provided in the Draft Solar PEIS remains valid, with the following
39 updates:

- 40
41 • The amount of surface water features within the SEZ and in the area of
42 indirect effects that could potentially be affected by solar energy development
43 is less because the size of the SEZ has been reduced.
44

- 1 • Most of Dry Lake has been eliminated from the SEZ boundary; therefore,
2 impacts on Dry Lake from construction activities would be less than assumed
3 in the Draft Solar PEIS.
4
5

6 ***11.3.11.4.3 SEZ-Specific Design Features and Design Feature Effectiveness***

7

8 Required programmatic design features that would reduce impacts on aquatic species are
9 described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific resources and
10 conditions will determine how programmatic design features are applied, for example:
11

- 12 • Appropriate engineering controls shall be implemented to minimize the
13 amount of surface water runoff, contaminants, and fugitive dust reaching
14 Dry Lake, California Wash, and Gypsum Wash.
15
16 • Development shall avoid any additional wetlands identified during future
17 site-specific fieldwork.
18
19 • The impact of groundwater withdrawals on streams near the SEZ, such as the
20 Muddy River, and on springs, such as those along the north shore of Lake
21 Meade and within the Desert NWR and Moapa NWR, shall be minimized or
22 eliminated.
23

24 It is anticipated that implementation of the programmatic design features will reduce
25 impacts on aquatic biota, and if the utilization of water from groundwater or surface water
26 sources is adequately controlled to maintain sufficient water levels in nearby aquatic habitats, the
27 potential impacts on aquatic biota from solar energy development at the Dry Lake SEZ would be
28 small.
29

30 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
31 analyses due to changes to the SEZ boundaries, and consideration of comments received as
32 applicable, no SEZ-specific design features for aquatic biota have been identified. Some SEZ-
33 specific design features may be identified through the process of preparing parcels for
34 competitive offer and subsequent project-specific analysis.
35
36

37 **11.3.12 Special Status Species**

38
39

40 **11.3.12.1 Affected Environment**

41

42 As presented in Section 11.3.12.1 of the Draft Solar PEIS, 62 special status species were
43 identified that could occur or have potentially suitable habitat within the affected area of the
44 proposed Dry Lake SEZ. The reduction in the size of the Dry Lake SEZ does not alter the
45 potential for these species to occur in the affected area. Figure 11.3.12.1-1 shows the known or
46 potential occurrences of species in the revised affected area of the Dry Lake SEZ that are listed,
47 proposed, or candidates for listing under the ESA. There is no change in the number of

1 groundwater-dependent species that may be affected by solar energy development on the revised
2 SEZ. Impacts on groundwater-dependent species are discussed in the Draft Solar PEIS; updated
3 information regarding impacts on these species is provided in Section 11.3.12.2. Groundwater-
4 dependent species are not further discussed here because the changes to the SEZ boundary are
5 not assumed to alter the impact determination for groundwater-dependent species.
6

7 Following the Draft Solar PEIS, additional information provided by the USFWS
8 indicated that the revised Dry Lake SEZ was situated in an area that provides habitat and genetic
9 connectivity between areas with greater habitat suitability, particularly between the Mormon
10 Mesa Critical Habitat Unit west of the SEZ and portions of greater habitat suitability north and
11 east of the SEZ (Figure 11.3.12.1-1). The USFWS identified the entire revised SEZ as priority
12 connectivity habitat for the desert tortoise through a least-cost pathway model (Ashe 2012) based
13 upon the USGS model for desert tortoise predicted suitable habitat (Nussear et al. 2009).
14

15 Since publication of the Draft Solar PEIS, 11 additional special status species have been
16 identified that could potentially occur in the affected area, based on county-level occurrences and
17 the presence of potentially suitable habitat. These 11 special status species are all designated
18 sensitive species by the Nevada BLM Office and include (1) plants: sticky ringstem; (2) birds:
19 golden eagle, gray vireo, loggerhead shrike, long-eared owl, and Lucy's warbler, and
20 (3) mammals: big brown bat, California myotis, hoary bat, long-legged myotis, and western
21 pipistrelle. These additional species are discussed in the following paragraphs.
22
23

24 **Sticky Ringstem.** The sticky ringstem is a perennial herb that is designated as a sensitive
25 species by the Nevada BLM. This species was not analyzed for the Dry Lake SEZ in the Draft
26 Solar PEIS. It is known from southern Nevada, portions of northern Arizona, New Mexico,
27 Texas, and Mexico. In Nevada, it is primarily known from the Frenchman Mountain area east
28 of Las Vegas and further east to the Muddy Mountains and Gold Butte (VRHCRP 2012). This
29 species occupies soils composed of calcareous shales and clay, loose talus, and gypsum at
30 elevations between 1,700 and 4,000 ft (518 and 1,219 m). It is commonly associated with the
31 Las Vegas bearpoppy. The sticky ringstem is known to occur in Clark County, Nevada, and
32 potentially suitable habitat for this species could occur on the SEZ and portions of the area of
33 indirect effects (Table 11.3.12.1-1).
34
35

36 **Golden Eagle.** The golden eagle is an uncommon to common permanent resident in
37 southern Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft Solar
38 PEIS. The species inhabits rolling foothills, mountain areas, and desert shrublands. It nests
39 on cliff faces and in large trees in open areas. Potentially suitable foraging habitat for this
40 species may occur in the revised area of the SEZ and throughout the area of indirect effects
41 (Table 11.3.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
42 suitable nesting habitat (cliffs and rock outcrops) does not occur in the revised area of the SEZ or
43 within the area of indirect effects (Table 11.3.12.1-1).
44
45

TABLE 11.3.12.1-1 Habitats, Potential Impacts, and Potential Mitigation for Special Status Species That Could Be Affected by Solar Energy Development on the Proposed Dry Lake SEZ as Revised^a

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^e and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Plants						
Sticky ringstem	<i>Anulocaulis leisolenus</i>	BLM-S; NV-S2	Known from southern Nevada, northern Arizona, and New Mexico, Texas, and Mexico. Occupies loose soils of calcareous shales and clay, loose talus, and gypsum at elevations between 1,700 and 4,000 ft. ⁱ About 65,400 acres ^j of potentially suitable habitat occurs in the SEZ region.	425 acres of potentially suitable habitat lost (0.7% of available potentially suitable habitat)	1,250 acres of potentially suitable habitat (1.9% of available potentially suitable habitat)	Small overall impact. Avoiding or minimizing disturbance to desert pavement habitat on the SEZ could reduce impacts. In addition, pre-disturbance surveys and avoiding or minimizing disturbance to occupied habitats in the areas of direct effects, translocation of individuals from areas of direct effects, or compensatory mitigation of direct effects on occupied habitats could reduce impacts.
Birds						
Golden eagle	<i>Aquila chrysaetos</i>	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 4,500,000 acres of potentially suitable habitat occurs within the SEZ region.	5,665 acres of potentially suitable habitat lost (0.1% of available potentially suitable habitat)	92,000 acres of potentially suitable habitat (2.0% 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	<i>Vireo vicinior</i>	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 650,000 acres of potentially suitable habitat occurs within the SEZ region.	0 acres	8,250 acres of potentially suitable habitat (1.3% of available potentially suitable habitat)	Small overall impact; no direct effects. No species-specific mitigation is warranted.

TABLE 11.3.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Birds (Cont.)						
Loggerhead shrike	<i>Lanius ludovicianus</i>	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 2,000,000 acres of potentially suitable habitat occurs within the SEZ region.	0 acres	14,250 acres of potentially suitable habitat (0.7% of available potentially suitable habitat)	Small overall impact; no direct effects. No species-specific mitigation is warranted.
Long-eared owl	<i>Asio otus</i>	BLM-S	An uncommon year-long 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 4,100,000 acres of potentially suitable habitat occurs within the SEZ region.	5,580 acres of potentially suitable habitat lost (0.1% of available potentially suitable habitat)	82,700 acres of potentially suitable habitat (2.0% 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 11.3.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Birds (Cont.)						
Lucy's warbler	<i>Vermivora luciae</i>	BLM-S	An uncommon summer resident and breeder in desert riparian areas. Occurs in desert wash habitats, especially those dominated by mesquite and saltcedar. Nests in tiny cavities in riparian woodlands. About 81,000 acres of potentially suitable habitat occurs within the SEZ region.	43 acres of potentially suitable habitat lost (0.1% of available potentially suitable habitat)	2,500 acres of potentially suitable habitat (3.1% of available potentially suitable habitat)	Small to large overall impact. Potentially suitable nesting habitat in riparian habitats in the Moapa and Pahrangat Valleys may be affected by groundwater withdrawal. The impact of water withdrawal on the Garnet Valley regional groundwater system that supports aquatic and mesic habitat in the SEZ region would depend on the volume of water withdrawn to support solar energy development on the SEZ. Avoiding or limiting withdrawals from this regional groundwater system could reduce impacts on this species to negligible levels. In addition, pre-disturbance surveys and avoidance or minimization of disturbance to occupied habitats (especially nesting habitats) on the SEZ or compensatory mitigation of direct effects on occupied habitats on the SEZ could reduce impacts. The potential for impact and need for mitigation should be determined in coordination with the USFWS and the NDOW.

TABLE 11.3.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Mammals						
Big brown bat	<i>Eptesicus fuscus</i>	BLM-S	Occurs throughout the southwestern United States in various habitat types. Uncommon in hot desert environments, but may occur in areas in close proximity to water sources such as lakes and washes. Roosts in buildings, caves, mines, and trees. About 3,700,000 acres of potentially suitable habitat occurs within the SEZ region.	5,665 acres of potentially suitable habitat lost (0.2% of available potentially suitable habitat)	84,700 acres of potentially suitable habitat (2.3% 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.
California myotis	<i>Myotis californicus</i>	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 3,500,000 acres of potentially suitable habitat occurs within the SEZ region.	5,625 acres of potentially suitable habitat lost (0.2% of available potentially suitable habitat)	85,700 acres of potentially suitable habitat (2.4% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.
Hoary bat	<i>Lasiurus cinereus</i>	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 3,500,000 acres of potentially suitable habitat occurs within the SEZ region.	5,665 acres of potentially suitable habitat lost (0.2% of available potentially suitable habitat)	83,700 acres of potentially suitable habitat (2.4% of available suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.

TABLE 11.3.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Mammals (Cont.)						
Long-legged myotis	<i>Myotis volans</i>	BLM-S	Common to uncommon year-round resident in southern Nevada. Uncommon in desert and arid grassland environments. Most common in woodlands above 4,000-ft elevation. Forages in chaparral, scrub, woodlands, and desert shrublands. Roosts in trees, caves, and crevices. About 3,700,000 acres of potentially suitable habitat occurs within the SEZ region.	5,580 acres of potentially suitable habitat lost (0.2% of available potentially suitable habitat)	83,200 acres of potentially suitable habitat (2.2% 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.
Western pipistrelle	<i>Pipistrellus hesperus</i>	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 4,800,000 acres of potentially suitable habitat occurs within the SEZ region.	5,710 acres of potentially suitable habitat lost (0.1% of available potentially suitable habitat)	93,000 acres of potentially suitable habitat (1.9% 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.

^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 11.3.12.1-1 of the Draft Solar PEIS.

^b BLM-S = listed as sensitive by the BLM.

Footnotes continued on next page.

TABLE 11.3.12.1-1 (Cont.)

-
- ^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 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 solar development. The potential degree of indirect effects would decrease with increasing distance away from the SEZ.
- ^g Overall impact magnitude categories were based on professional judgment and are as follows: (1) *small*: $\leq 1\%$ 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 $\leq 10\%$ of the population or its habitat would be lost and the activity would result in a measurable but moderate (not destabilizing) change in carrying capacity or population size in the affected area; (3) *large*: $>10\%$ of a population or its habitat would be lost and the activity would result in a large, measurable, and destabilizing change in carrying capacity or population size in the affected area. Note that much greater weight was given to the magnitude of direct effects because those effects would be difficult to mitigate. Design features would reduce most indirect effects to negligible levels.
- ^h Species-specific mitigations are suggested here, but final mitigations should be developed in consultation with state and federal agencies and should be based on pre-disturbance surveys.
- ⁱ To convert ft to m, multiply by 0.3048.
- ^j To convert acres to km^2 , multiply by 0.004047.

1 **Gray Vireo.** The gray vireo is an uncommon summer resident in southern Nevada. This
2 species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS. The species occurs in
3 arid environments such as pinyon-juniper, chaparral, and desert shrublands. It builds open-cup
4 nests of plant material in forked branches of shrubs or small trees. On the basis of an evaluation
5 of the SWReGAP habitat suitability model for this species, potentially suitable habitat does not
6 occur in the revised area of the SEZ; however, potentially suitable breeding and nonbreeding
7 habitat may occur outside the SEZ in the area of indirect effects (Table 11.3.12.1-1).
8
9

10 **Loggerhead Shrike.** The loggerhead shrike is a common winter resident in lowlands and
11 foothills of southern Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft
12 Solar PEIS. The species occurs in open habitats with shrubs, trees, utility lines, or other perches.
13 The highest densities of this species occur in open-canopied foothill forests. On the basis of an
14 evaluation of the SWReGAP habitat suitability model for this species, potentially suitable habitat
15 does not occur in the revised area of the SEZ; however, potentially suitable foraging habitat may
16 occur outside the SEZ in the area of indirect effects (Table 11.3.12.1-1).
17
18

19 **Long-Eared Owl.** The long-eared owl is an uncommon year-round resident in southern
20 Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS. The
21 species inhabits desert shrubland environments in proximity to riparian areas such as desert
22 washes. It nests in trees using old nests from other birds or squirrels. Potentially suitable foraging
23 habitat for this species may occur in the revised area of the SEZ and throughout the area of
24 indirect effects (Table 11.3.12.1-1). On the basis of an evaluation of SWReGAP land cover
25 types, potentially suitable nesting habitat (forests) does not occur in the SEZ or within the area
26 of indirect effects (Table 11.3.12.1-1).
27
28

29 **Lucy's Warbler.** The Lucy's warbler is an uncommon summer resident and breeder in
30 desert riparian areas of southern Nevada. This species was not analyzed for the Dry Lake SEZ
31 in the Draft Solar PEIS. The species inhabits desert wash habitats, especially those dominated
32 by mesquite and saltcedar. It nests in tiny cavities in riparian woodlands. On the basis of an
33 evaluation of the SWReGAP habitat suitability model for this species, potentially suitable
34 habitat does not occur in the revised area of the SEZ; however, potentially suitable breeding
35 and nonbreeding habitat may occur outside the SEZ in the area of indirect effects
36 (Table 11.3.12.1-1).
37
38

39 **Big Brown Bat.** The big brown bat is a fairly common year-round resident in southern
40 Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS. The big
41 brown bat is uncommon in desert habitats but may occur in desert shrublands that are in close
42 proximity to water sources. The species inhabits desert shrubland environments in proximity to
43 riparian areas such as desert washes. It roosts in buildings, caves, mines, and trees. Potentially
44 suitable foraging habitat for this species may occur in the revised area of the SEZ and throughout
45 the area of indirect effects (Table 11.3.12.1-1). On the basis of an evaluation of SWReGAP land

1 cover types, potentially suitable roosting habitat (forests and rock outcrops) does not occur in the
2 revised area of the SEZ or within the area of indirect effects (Table 11.3.12.1-1).

3
4
5 **California Myotis.** The California myotis is a fairly common year-round resident in
6 southern Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS.
7 The species inhabits desert, chaparral, woodlands, and forests. It roosts primarily in crevices but
8 will also use buildings, mines, and hollow trees. Potentially suitable foraging habitat for this
9 species may occur in the revised area of the SEZ and throughout the area of indirect effects
10 (Table 11.3.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
11 suitable roosting habitat (forests and rock outcrops) does not occur in the revised area of the SEZ
12 or within the area of indirect effects (Table 11.3.12.1-1).

13
14
15 **Hoary Bat.** The hoary bat is a fairly common year-round resident in southern Nevada.
16 This species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS. The species
17 inhabits woodlands, foothills, desert shrublands, and chaparral. It roosts primarily in trees.
18 Potentially suitable foraging habitat for this species may occur in the revised area of the SEZ
19 and throughout the area of indirect effects (Table 11.3.12.1-1). On the basis of an evaluation of
20 SWReGAP land cover types, potentially suitable roosting habitat (forests) does not occur in the
21 revised area of the SEZ or within the area of indirect effects (Table 11.3.12.1-1).

22
23
24 **Long-Legged Myotis.** The long-legged myotis is a common to uncommon year-round
25 resident in southern Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft
26 Solar PEIS. This species is uncommon in desert and arid grassland environments and most
27 common in woodlands above 4,000-ft elevation. It forages in chaparral, scrub, woodlands, and
28 desert shrublands and roosts in trees, caves, and crevices. Potentially suitable foraging habitat for
29 this species may occur in the revised area of the SEZ and throughout the area of indirect effects
30 (Table 11.3.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
31 suitable roosting habitat (forests and rock outcrops) does not occur in the revised area of the SEZ
32 or within the area of indirect effects (Table 11.3.12.1-1).

33
34
35 **Western Pipistrelle.** The western pipistrelle is a common year-round resident in southern
36 Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS. The
37 species inhabits mountain foothill woodlands, desert shrublands, desert washes, and pinyon-
38 juniper woodlands. It roosts primarily in rock crevices and occasionally in mines and caves.
39 Potentially suitable foraging habitat for this species may occur in the revised area of the SEZ
40 and throughout the area of indirect effects (Table 11.3.12.1-1). On the basis of an evaluation of
41 SWReGAP land cover types, potentially suitable roosting habitat (rock outcrops) does not occur
42 in the revised area of the SEZ or within the area of indirect effects (Table 11.3.12.1-1).

11.3.12.2 Impacts

Overall impact magnitude categories were based on professional judgment and include (1) *small*: a relatively small proportion ($\leq 1\%$) of the special status species' habitat within the SEZ region would be lost; (2) *moderate*: an intermediate proportion (>1 but $\leq 10\%$) 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 SEZ could affect potentially suitable habitats of special status species. The analysis presented in the Draft Solar PEIS for the original Dry Lake SEZ boundaries indicated that development would result in no impact or a small overall impact on all special status species, except those that are groundwater-dependent (Table 11.3.12.1-1 in the Draft Solar PEIS). In the Draft Solar PEIS, those special status species that could be affected by groundwater withdrawals on the SEZ were determined to have impacts that ranged from small to large depending upon the scale of development and water needs to serve development on the SEZ. Development within the revised area of the Dry Lake SEZ could still affect the same 62 species evaluated in the Draft Solar PEIS; however, the reduction in the developable area would result in reduced (and still small) impact levels compared to original estimates in the Draft Solar PEIS. Pre-disturbance consultation with the BLM and the necessary state and federal agencies should be conducted to determine the project-specific water needs and the potential for impact on these species (these groundwater-dependent species are listed in Table 11.3.12.1-1 of the Draft Solar PEIS and are listed in Section 11.3.12.3).

In the Draft Solar PEIS, it was determined that solar energy development within the Dry Lake SEZ would have a small overall effect on the desert tortoise. Impacts on this species are not requantified in this update for the Final Solar PEIS because it is expected that the overall impact will remain small. Following publication of the Draft Solar PEIS, the USFWS has identified the revised SEZ as being situated in an area that provides habitat and genetic connectivity between areas with greater habitat suitability (Ashe 2012). The USFWS has also determined that the revised SEZ is within high-priority connectivity areas, which are necessary to facilitate natural processes of gene exchange between populations in order to maintain population viability. Solar energy development on the Dry Lake SEZ, therefore, may isolate and fragment these tortoise populations by creating impediments to natural migration patterns.

Development of actions to reduce impacts (e.g., reasonable and prudent alternatives, reasonable and prudent measures, and terms and conditions) on the desert tortoise would require formal consultation with the USFWS under Section 7 of the ESA. This project-level consultation will tier from the programmatic ESA Section 7 consultation that will be completed with the PEIS ROD. Priority should be given to the development of a thorough survey protocol and measures to avoid impacts on known tortoise populations. If necessary, minimization measures and mitigation measures, which could potentially include translocation actions and compensatory mitigation, may be required. These consultations may be used to authorize incidental take statements per Section 10 of the ESA (if necessary). Consultation with the NDOW should also occur to determine any state mitigation requirements.

1 Inherent dangers to tortoises are associated with their capture, handling, and translocation
2 from the SEZ. These actions, if conducted improperly, can result in injury or death. To minimize
3 these risks and as stated above, the desert tortoise translocation plan should be developed in
4 consultation with the USFWS and should follow the *Guidelines for Handling Desert Tortoises*
5 *during Construction Projects* (Desert Tortoise Council 1994) and other current translocation
6 guidance provided by the USFWS. Consultation will identify potentially suitable recipient
7 locations, density thresholds for tortoise populations in recipient locations, and procedures for
8 pre-disturbance clearance surveys and tortoise handling, as well as disease-testing and post-
9 translocation monitoring and reporting requirements. Despite some risk of mortality or decreased
10 fitness, translocation is widely accepted as a useful strategy for the conservation of the desert
11 tortoise (Field et al. 2007).

12
13 To offset impacts of solar development on the SEZ, compensatory mitigation may be
14 needed to balance the acreage of habitat lost with acquisition of lands that would be improved
15 and protected for desert tortoise populations (USFWS 1994). Compensation can be accomplished
16 by improving the carrying capacity for the desert tortoise on the acquired lands. Other mitigation
17 actions may include funding for the habitat enhancement of the desert tortoise on existing
18 federal lands. Consultation with the USFWS and NDOW would be necessary to determine the
19 appropriate mitigation ratio to acquire, enhance, and preserve desert tortoise compensation lands.

20
21 In addition, impacts on the 11 BLM-designated sensitive species that were not evaluated
22 for the Dry Lake SEZ in the Draft Solar PEIS are discussed below and in Table 11.3.12.1-1. The
23 impact assessment for these additional species was carried out in the same way as the impact
24 assessment for those species analyzed in the Draft Solar PEIS (Section 11.3.12.2).

25
26
27 **Sticky Ringstem.** The sticky ringstem was not analyzed for the Dry Lake SEZ in the
28 Draft Solar PEIS. According to the SWReGAP land cover model, approximately 425 acres
29 (2 km²) of potentially suitable desert pavement habitat on the revised SEZ may be directly
30 affected by construction and operations of solar energy development (Table 11.3.12.1-1). This
31 direct effects area represents about 0.7% of available suitable habitat in the SEZ region. About
32 1,250 acres (5 km²) of potentially suitable habitat occurs in the area of potential indirect effects;
33 this area represents about 1.9% of the available potentially suitable habitat in the SEZ region
34 (Table 11.3.12.1-1).

35
36 The overall impact on the sticky ringstem from construction, operation, and
37 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
38 SEZ is considered small, because less than 1% of potentially suitable habitat for this species
39 occurs in the area of direct effects. The implementation of programmatic design features is
40 expected to be sufficient to reduce indirect impacts to negligible levels.

41
42 Avoiding or minimizing disturbance to desert pavement habitat on the SEZ could reduce
43 direct impacts on this species to negligible levels. Impacts may also be reduced by conducting
44 pre-disturbance surveys and avoiding or minimizing disturbance to occupied habitats in the area
45 of direct effects. If avoidance or minimization is not feasible, plants could be translocated from
46 the area of direct effects to protected areas that would not be affected directly or indirectly by

1 future development. Alternatively, or in combination with translocation, a compensatory
2 mitigation plan could be developed and implemented to mitigate direct effects on occupied
3 habitats. Compensation could involve the protection and enhancement of existing occupied or
4 suitable habitats to compensate for habitats lost to development. A comprehensive mitigation
5 strategy that uses one or more of these options could be designed to completely offset the
6 impacts of development.

7
8
9 **Golden Eagle.** The golden eagle was not analyzed for the Dry Lake SEZ in the Draft
10 Solar PEIS. This species is an uncommon to common permanent resident in southern Nevada,
11 and potentially suitable foraging habitat is expected to occur in the revised affected area of the
12 Dry Lake SEZ. Approximately 5,665 acres (23 km²) of potentially suitable foraging habitat
13 in the revised area of the SEZ could be directly affected by construction and operations
14 (Table 11.3.12.1-1). This direct impact area represents 0.1% of potentially suitable habitat for the
15 golden eagle in the SEZ region. About 92,000 acres (372 km²) of potentially suitable foraging
16 habitat occurs in the area of indirect effects; this area represents about 2.0% of the available
17 suitable foraging habitat in the SEZ region (Table 11.3.12.1-1). Most of this area could serve as
18 foraging habitat (open shrublands). On the basis of an evaluation of SWReGAP land cover types,
19 potentially suitable nesting habitat (cliffs and rock outcrops) does not occur in the SEZ or within
20 the area of indirect effects.

21
22 The overall impact on the golden eagle from construction, operation, and
23 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
24 SEZ is considered small because the amount of potentially suitable foraging habitat for this
25 species in the area of direct effects represents less than 1% of potentially suitable foraging
26 habitat in the SEZ region. The implementation of programmatic design features is expected to
27 be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of direct
28 impacts on all potentially suitable foraging habitat is not a feasible way to mitigate impacts on
29 the golden eagle because potentially suitable shrubland is widespread throughout the area of
30 direct effects and readily available in other portions of the affected area.

31
32
33 **Gray Vireo.** The gray vireo was not analyzed for the Dry Lake SEZ in the Draft Solar
34 PEIS. This species is an uncommon summer resident in southern Nevada. The gray vireo is not
35 known to occur on the revised area of the Dry Lake SEZ, and suitable habitat is not expected to
36 occur on the SEZ. However, on the basis of an evaluation of the SWReGAP habitat suitability
37 model for this species, approximately 8,250 acres (33 km²) of potentially suitable breeding and
38 nonbreeding habitat may occur outside the SEZ in the area of indirect effects. This area
39 represents about 1.3% of the potentially suitable foraging habitat in the SEZ region
40 (Table 11.3.12.1-1).

41
42 The overall impact on the gray vireo from construction, operation, and decommissioning
43 of utility-scale solar energy facilities within the revised Dry Lake SEZ is considered small
44 because no potentially suitable habitat for this species occurs in the area of direct effects, and
45 only indirect effects are possible. The implementation of programmatic design features may be
46 sufficient to reduce indirect impacts on this species to negligible levels.

1 **Loggerhead Shrike.** The loggerhead shrike was not analyzed for the Dry Lake SEZ in
2 the Draft Solar PEIS. This species is a common winter resident in lowlands and foothills of
3 southern Nevada. The loggerhead shrike is not known to occur in the revised area of the Dry
4 Lake SEZ, and suitable habitat is not expected to occur on the SEZ. However, on the basis of
5 an evaluation of the SWReGAP habitat suitability model for this species, approximately
6 14,250 acres (58 km²) of potentially suitable foraging habitat may occur outside the SEZ in the
7 area of indirect effects. This area represents about 0.7% of the potentially suitable foraging
8 habitat in the SEZ region (Table 11.3.12.1-1).

9
10 The overall impact on the loggerhead shrike from construction, operation, and
11 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
12 SEZ is considered small because no potentially suitable habitat for this species occurs in the area
13 of direct effects, and only indirect effects are possible. The implementation of programmatic
14 design features may be sufficient to reduce indirect impacts on this species to negligible levels.

15
16
17 **Long-Eared Owl.** The long-eared owl was not analyzed for the Dry Lake SEZ in the
18 Draft Solar PEIS. This species is an uncommon to common permanent resident in southern
19 Nevada, and potentially suitable foraging habitat is expected to occur in the revised affected
20 area of the Dry Lake SEZ. Approximately 5,580 acres (23 km²) of potentially suitable foraging
21 habitat on the revised area of the SEZ could be directly affected by construction and operations
22 (Table 11.3.12.1-1). This direct impact area represents 0.1% of potentially suitable habitat in the
23 SEZ region. About 82,700 acres (335 km²) of potentially suitable foraging habitat occurs in the
24 area of indirect effects; this area represents about 2.0% of the available suitable foraging habitat
25 in the SEZ region (Table 11.3.12.1-1).

26
27 The overall impact on the long-eared owl from construction, operation, and
28 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
29 SEZ is considered small because the amount of potentially suitable foraging habitat for this
30 species in the area of direct effects represents less than 1% of potentially suitable foraging
31 habitat in the SEZ region. The implementation of programmatic design features is expected to
32 be sufficient to reduce indirect impacts on this species to negligible levels. Avoidance of direct
33 impacts on all potentially suitable foraging habitat is not a feasible way to mitigate impacts on
34 the long-eared owl because potentially suitable shrubland is widespread throughout the area of
35 direct effects and readily available in other portions of the affected area.

36
37
38 **Lucy's Warbler.** The Lucy's warbler was not analyzed for the Dry Lake SEZ in the
39 Draft Solar PEIS. This species is an uncommon summer resident and breeder in desert riparian
40 areas of southern Nevada. The Lucy's warbler is not known to occur in the revised area of the
41 Dry Lake SEZ. However, approximately 43 acres (0.2 km²) of potentially suitable foraging or
42 nesting habitat in the revised area of the SEZ could be directly affected by construction and
43 operations (Table 11.3.12.1-1). This direct impact area represents 0.1% of potentially suitable
44 habitat in the SEZ region. About 2,500 acres (10 km²) of potentially suitable foraging or nesting
45 habitat occurs in the area of indirect effects; this area represents about 3.1% of the available
46 suitable habitat in the SEZ region (Table 11.3.12.1-1).

1 Riparian habitats in the Moapa Valley that may provide suitable nesting and foraging
2 habitat for the Lucy's warbler may be affected by spring discharges associated with the Garnet
3 Valley regional groundwater basin. Solar energy development in the revised area of the Dry
4 Lake SEZ may require water from the same regional groundwater basin that supports these
5 riparian habitats. As discussed for groundwater-dependent species in the Draft Solar PEIS
6 (Section 11.3.12.2.1), impacts on this species could range from small to large depending upon
7 the solar energy technology deployed, the scale of development within the SEZ, and the
8 cumulative rate of groundwater withdrawals (Table 11.3.12.1-1).

9
10 The implementation of programmatic design features and complete avoidance or
11 limitation of groundwater withdrawals from the regional groundwater system would reduce
12 impacts on the Lucy's warbler to small or negligible levels. Impacts can be better quantified for
13 specific projects once water needs are identified. In addition, avoiding or minimizing disturbance
14 to riparian areas on the SEZ would reduce direct impacts on this species. Impacts also could be
15 reduced by conducting pre-disturbance surveys and avoiding or minimizing disturbance to
16 occupied habitats (especially nests) in the area of direct effects. If avoidance or minimization is
17 not feasible, a compensatory mitigation plan could be developed and implemented to mitigate
18 direct effects on occupied habitats. Compensation could involve the protection and enhancement
19 of existing occupied or suitable habitats to compensate for habitats lost to development. A
20 comprehensive mitigation strategy that uses one or both of these options could be designed to
21 completely offset the impacts of development.

22
23
24 **Big Brown Bat.** The big brown bat is a fairly common year-round resident in southern
25 Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS. Suitable
26 roosting habitats (caves, forests, and buildings) are not expected to occur in the revised area
27 of the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not
28 been determined. Approximately 5,665 acres (25 km²) of potentially suitable foraging habitat
29 in the revised area of the SEZ could be directly affected by construction and operations
30 (Table 11.3.12.1-1). This direct impact area represents about 0.2% of potentially suitable
31 foraging habitat in the region. About 84,700 acres (343 km²) of potentially suitable foraging
32 habitat occurs in the area of indirect effects; this area represents about 2.3% of the available
33 suitable foraging habitat in the region (Table 11.3.12.1-1). On the basis of an evaluation of
34 SWReGAP land cover types, no suitable roosting habitat (forests and rock outcrops) exists
35 within the SEZ or within the area of indirect effects.

36
37 The overall impact on the big brown bat from construction, operation, and
38 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
39 SEZ is considered small, because the amount of potentially suitable habitat for this species in the
40 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
41 implementation of programmatic design features is expected to be sufficient to reduce indirect
42 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
43 is not a feasible way to mitigate impacts because potentially suitable foraging habitat is
44 widespread throughout the area of direct effects and is readily available in other portions of the
45 SEZ region.

1 **California Myotis.** The California myotis is a fairly common year-round resident in
2 southern Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS.
3 Suitable roosting habitats (forests and rock outcrops) are not expected to occur in the revised
4 area of the SEZ, but the availability of suitable roosting sites in the area of indirect effects has
5 not been determined. Approximately 5,625 acres (23 km²) of potentially suitable foraging
6 habitat in the revised area of the SEZ could be directly affected by construction and operations
7 (Table 11.3.12.1-1). This direct impact area represents about 0.2% of potentially suitable
8 foraging habitat in the region. About 85,700 acres (347 km²) of potentially suitable foraging
9 habitat occurs in the area of indirect effects; this area represents about 2.4% of the available
10 suitable foraging habitat in the region (Table 11.3.12.1-1). On the basis of an evaluation of
11 SWReGAP land cover types, no suitable roosting habitat (forests and rock outcrops) exists
12 within the SEZ or within the area of indirect effects.

13
14 The overall impact on the California myotis from construction, operation, and
15 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
16 SEZ is considered small, because the amount of potentially suitable habitat for this species in the
17 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
18 implementation of programmatic design features is expected to be sufficient to reduce indirect
19 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging
20 habitat is not a feasible way to mitigate impacts because potentially suitable foraging habitat is
21 widespread throughout the area of direct effects and is readily available in other portions of the
22 SEZ region.

23
24
25 **Hoary Bat.** The hoary bat is a fairly common year-round resident in southern Nevada.
26 This species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS. Suitable roosting
27 habitats (forests) are not expected to occur in the revised area of the SEZ, but the availability of
28 suitable roosting sites in the area of indirect effects has not been determined. Approximately
29 5,665 acres (23 km²) of potentially suitable foraging habitat in the revised area of the SEZ could
30 be directly affected by construction and operations (Table 11.3.12.1-1). This direct impact area
31 represents about 0.2% of potentially suitable foraging habitat in the region. About 83,700 acres
32 (339 km²) of potentially suitable foraging habitat occurs in the area of indirect effects; this area
33 represents about 2.4% of the available suitable foraging habitat in the region (Table 11.3.12.1-1).
34 On the basis of an evaluation of SWReGAP land cover types, no suitable roosting habitat
35 (forests) exists within the revised area of the SEZ or within the area of indirect effects.

36
37 The overall impact on the hoary bat from construction, operation, and decommissioning
38 of utility-scale solar energy facilities within the revised area of the Dry Lake SEZ is considered
39 small, because the amount of potentially suitable habitat for this species in the area of direct
40 effects represents less than 1% of potentially suitable habitat in the region. The implementation
41 of programmatic design features is expected to be sufficient to reduce indirect impacts on this
42 species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible
43 way to mitigate impacts because potentially suitable foraging habitat is widespread throughout
44 the area of direct effects and is readily available in other portions of the SEZ region.

1 **Long-Legged Myotis.** The long-legged myotis is a common to uncommon year-round
2 resident in southern Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft
3 Solar PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to occur in
4 the revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect
5 effects has not been determined. Approximately 5,580 acres (23 km²) of potentially suitable
6 foraging habitat in the revised area of the SEZ could be directly affected by construction and
7 operations (Table 11.3.12.1-1). This direct impact area represents about 0.2% of potentially
8 suitable foraging habitat in the region. About 83,200 acres (337 km²) of potentially suitable
9 foraging habitat occurs in the area of indirect effects; this area represents about 2.2% of the
10 available suitable foraging habitat in the region (Table 11.3.12.1-1). On the basis of an
11 evaluation of SWReGAP land cover types, no suitable roosting habitat (forests and rock
12 outcrops) exists within the SEZ or within the area of indirect effects.
13

14 The overall impact on the long-legged myotis from construction, operation, and
15 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
16 SEZ is considered small, because the amount of potentially suitable habitat for this species in
17 the area of direct effects represents less than 1% of potentially suitable habitat in the region. The
18 implementation of programmatic design features is expected to be sufficient to reduce indirect
19 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging
20 habitat is not a feasible way to mitigate impacts because potentially suitable foraging habitat is
21 widespread throughout the area of direct effects and is readily available in other portions of the
22 SEZ region.
23

24
25 **Western Pipistrelle.** The western pipistrelle is a common year-round resident in southern
26 Nevada. This species was not analyzed for the Dry Lake SEZ in the Draft Solar PEIS. Suitable
27 roosting habitats (forests and rock outcrops) are not expected to occur in the revised area of the
28 SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been
29 determined. Approximately 5,710 acres (23 km²) of potentially suitable foraging habitat in
30 the revised area of the SEZ could be directly affected by construction and operations
31 (Table 11.3.12.1-1). This direct impact area represents about 0.1% of potentially suitable
32 foraging habitat in the region. About 93,000 acres (376 km²) of potentially suitable foraging
33 habitat occurs in the area of indirect effects; this area represents about 1.9% of the available
34 suitable foraging habitat in the region (Table 11.3.12.1-1). On the basis of an evaluation of
35 SWReGAP land cover types, no suitable roosting habitat (forests and rock outcrops) exists
36 within the SEZ or within the area of indirect effects.
37

38 The overall impact on the western pipistrelle from construction, operation, and
39 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
40 SEZ is considered small, because the amount of potentially suitable habitat for this species in the
41 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
42 implementation of programmatic design features is expected to be sufficient to reduce indirect
43 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging
44 habitat is not a feasible way to mitigate impacts because potentially suitable foraging habitat is
45 widespread throughout the area of direct effects and is readily available in other portions of the
46 SEZ region.
47

11.3.12.3 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 determine how programmatic design features are applied, for example:

- Pre-disturbance surveys should be conducted within the SEZ to determine the presence and abundance of special status species, including those identified in Table 11.3.12.1-1 of the Draft Solar PEIS, as well as those additional species presented in Table 11.3.12.1-1 of this update for the Final Solar PEIS. Disturbance to occupied habitats for these species shall be avoided or minimized to the extent practicable. If avoiding or minimizing impacts on occupied habitats is not possible, translocation of individuals from areas of direct effects, or compensatory mitigation of direct effects on occupied habitats may 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.
- Consultation with the USFWS and the NDOW shall be conducted to address the potential for impacts on the following four species currently listed as threatened or endangered under the ESA: Moapa dace, Pahrump poolfish, desert tortoise, and southwestern willow flycatcher. 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.
- Coordination with the USFWS and NDOW shall be conducted for the following seven species that are candidates or under review for listing under the ESA that may be affected by solar energy development on the SEZ: Las Vegas buckwheat, grated tryonia, Moapa pebblesnail, Moapa Valley pebblesnail, Moapa Warm Spring riffle beetle, Moapa speckled dace, and Moapa White River springfish. Coordination would identify an appropriate survey protocol and mitigation requirements, which may include avoidance, minimization, translocation, or compensation.
- Avoiding or minimizing disturbance to desert wash habitat on the SEZ may reduce or eliminate impacts on the following 12 special status species: beaver dam breadroot, dune sunflower, halfring milkvetch, Las Vegas buckwheat, Littlefield milkvetch, Parish's phacelia, rosy two-tone beardtongue, sticky buckwheat, threecorner milkvetch, yellow two-tone beardtongue, Lucy's warbler, and phainopepla.
- Avoiding or minimizing disturbance to desert pavement habitat on the SEZ may reduce or eliminate impacts on the following six special status species:

1 dune sunflower, Las Vegas bearpoppy, mottled milkvetch, silverleaf sunray,
2 sticky ringstem, threecorner milkvetch, and red-tail blazing star bee.

- 3
- 4 • Avoiding or minimizing disturbance to playa habitat on the SEZ to reduce or
5 eliminate impacts on the following two special status species: Littlefield
6 milkvetch and Parish's phacelia.
- 7
- 8 • Avoidance or minimization of groundwater withdrawals from the Garnet
9 Valley basin may reduce or eliminate impacts on the following
10 14 groundwater-dependent special status species: grated tryonia, Moapa
11 pebblesnail, Moapa Valley pebblesnail, Moapa Warm Springs riffle beetle,
12 Spring Mountains springsnail, Warm Springs naucorid, Moapa dace, Moapa
13 speckled dace, Moapa White River springfish, Pahrump poolfish,
14 southwestern toad, Lucy's warbler, phainopepla, and southwestern willow
15 flycatcher.
- 16

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

20

21 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
22 analyses due to changes to the SEZ boundaries, and consideration of comments received as
23 applicable, no SEZ-specific design features for special status species have been identified. Some
24 SEZ-specific design features may be identified through the process of preparing parcels for
25 competitive offer and subsequent project-specific analysis. Projects will comply with terms and
26 conditions set forth by the USFWS Biological Opinion resulting from the programmatic
27 consultation and any necessary project-specific ESA Section 7 consultations.

28

29

30 **11.3.13 Air Quality and Climate**

31

32

33 **11.3.13.1 Affected Environment**

34

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

37

38

39 **11.3.13.1.1 Existing Air Emissions**

40

41 The Draft Solar PEIS presented Clark County emissions data for 2002. More recent data
42 for 2008 (EPA 2011a) were reviewed. The two emissions inventories used different sources and
43 assumptions; for example, the 2008 data did not include biogenic VOC emissions, and the
44 Mohave coal-fired power plant, which was the dirtiest in the western United States, closed in
45 2005. In the more recent data, emissions of SO₂, NO_x, CO, and VOC were lower, while

1 emissions of PM₁₀ and PM_{2.5} were higher. These changes would not affect modeled air quality
2 impacts presented in this update.

3 4 5 **11.3.13.1.2 Air Quality**

6
7 The calendar quarterly average NAAQS of 1.5 µg/m³ for lead (Pb) presented in
8 Table 11.3.13.1-2 of the Draft Solar PEIS has been replaced by the rolling 3-month standard
9 (0.15 µg/m³). The federal 24-hour and annual SO₂, 1-hour O₃, and annual PM₁₀ standards
10 have been revoked as well (EPA 2011b). These changes will not affect the modeled air quality
11 impacts presented in this update. Nevada SAAQS have not been changed.

12
13 On September 27, 2010, Clark County was redesignated from a nonattainment to a
14 maintenance area for CO. As noted in the Draft Solar PEIS, the proposed Dry Lake SEZ lies
15 outside this area, and the conclusion in the Draft Solar PEIS that the proposed Dry Lake SEZ
16 is in attainment for all criteria pollutants except 8-hour ozone remains valid.

17
18 The size of the proposed Dry Lake SEZ was reduced from 15,649 acres (63 km²) to
19 5,717 acres (23 km²). On the basis of this reduction, the distances to the nearest Class I areas are
20 somewhat larger than was presented in the Draft Solar PEIS. However, only one Class I area
21 (Grand Canyon NP) lies closer than the 62-mi (100-km) distance within which the EPA
22 recommends that the permitting authorities notify the Federal Land Managers. Thus, the
23 conclusion in the Draft Solar PEIS remains valid.

24 25 26 **11.3.13.2 Impacts**

27 28 29 **11.3.13.2.1 Construction**

30 31 32 **Methods and Assumptions**

33
34 Except for the area disturbed at any one time during construction, the methods and
35 modeling assumptions have not changed substantially from those presented in the Draft Solar
36 PEIS. On the basis of the reduced size of the SEZ, air quality impacts for this Final Solar PEIS
37 were modeled by assuming that a maximum of 3,000 acres (12.14 km²) would be disturbed for
38 one project at any one time in the SEZ; the Draft Solar PEIS assumed disturbance of a maximum
39 of 6,000 acres (24.28 km²) at any one time.

1 **Results**

2
3 Potential particulate air impacts from construction were remodeled based on the updated
4 boundaries of the proposed Dry Lake SEZ.¹ Changes in magnitude to predicted impacts at the
5 boundary would be expected to be larger than changes at greater distances from the SEZ.
6 Table 11.3.13.2-1 presents the updated maximum modeled concentrations from construction
7 fugitive dust.
8

9 The updated maxima are lower than those in the Draft Solar PEIS, as would be expected
10 given the reduction in the area assumed to be disturbed. Reductions were larger for the annual
11 maximum increment (by about 42%) than for the 24-hour maximum increment (by about 5 to
12 12%). Totals, except for annual PM_{2.5}, could still exceed the NAAQS/SAAQS levels. These
13 updated predictions are still consistent with the conclusion in the Draft Solar PEIS that maximum
14 particulate levels in the vicinity of the SEZ could exceed the standard levels used for
15 comparison. These high PM₁₀ concentrations would be limited to the immediate areas
16 surrounding the SEZ boundary and would decrease quickly with distance.
17

18 Other locations modeled in the Draft Solar PEIS include Moapa, Moapa Valley, Overton,
19 and the nearest residences near North Las Vegas. The updated analysis conducted for this Final
20 Solar PEIS predicted concentrations at all modeled locations lower than those presented in the
21 Draft Solar PEIS. The conclusions presented in the Draft Solar PEIS remain valid with
22 concentrations exceeding NAAQS/SAAQS values only at or near the SEZ boundary.
23

24 Updated 24-hour and annual PM₁₀ concentration increments at the surrogate receptors²
25 for the nearest Class I Area—Grand Canyon NP in Arizona—are lower than those presented in
26 the Draft Solar PEIS; the updated 24-hour PM₁₀ increment is reduced from a value exceeding
27 the 24-hour Class I PSD increment in the Draft Solar PEIS to a value of about 89% of the
28 increment. These surrogate receptors are more than 23 mi (37 km) from the Grand Canyon NP
29 and the concentrations would be even lower in the Grand Canyon. The conclusion in the Draft
30 Solar PEIS that the 24-hour PM₁₀ Class I PSD increment could be somewhat exceeded in the
31 Grand Canyon NP is updated for this Final Solar PEIS to conclude that all Class I PSD
32 increments for PM would be met at the nearest Class I area.
33
34

1 At this programmatic level, detailed information on construction activities, such as facility size, type of solar technology, heavy equipment fleet, activity level, work schedule, and so forth, is not known; thus air quality modeling cannot be conducted. Therefore, it has been assumed that an area of 3,000 acres (12.14 km²) would be disturbed continuously, and 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 predicted impacts on ambient air quality for specific projects would be much lower than those presented in this Final Solar PEIS.

2 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.

1 **TABLE 11.3.13.2-1 Maximum Air Quality Impacts from Emissions Associated with**
 2 **Construction Activities for the Proposed Dry Lake SEZ as Revised**

Pollutant ^a	Averaging Time	Rank ^b	Concentration ($\mu\text{g}/\text{m}^3$)				Percentage of NAAQS/SAAQS	
			Maximum Increment ^b	Background ^c	Total	NAAQS/SAAQS	Increment	Total
PM ₁₀	24 hours	H6H	552	97.0	649	150	368	433
	Annual	– ^d	50.9	22.0	72.9	50	102	146
PM _{2.5}	24 hours	H8H	33.6	10.2	43.8	35	96	125
	Annual	–	5.1	4.1	9.1	15	34	61

a PM_{2.5} = particulate matter with a diameter of $\leq 2.5 \mu\text{m}$; PM₁₀ = particulate matter with a diameter of $\leq 10 \mu\text{m}$.

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 11.3.13.1-2 of the Draft Solar PEIS.

d A dash indicates not applicable.

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Except for the Class I PSD increments, the conclusions presented in the Draft Solar PEIS remain valid. Predicted 24-hour and annual PM₁₀ and 24-hour PM_{2.5} concentration levels could exceed the standard levels at the SEZ boundaries and in the immediate surrounding areas during the construction of solar facilities. To reduce potential impacts on ambient air quality and in compliance with programmatic design features, aggressive dust control measures would be used. Potential air quality impacts on nearby communities would be much lower. The annual PM_{2.5} concentration level is predicted to be lower than its standard level. Modeling conducted for this Final Solar PEIS indicates that emissions from construction activities are not anticipated to cause particulate levels to exceed the Class I PSD increments at the nearest federal Class I area (Grand Canyon NP). Accordingly, it is anticipated that impacts of construction activities on ambient air quality would be moderate and temporary, as concluded in the Draft Solar PEIS.

With the reduced size of the SEZ, emissions from construction equipment and vehicles would be less than 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 Solar PEIS, emissions from construction-related equipment and vehicles would be temporary and could cause some unavoidable but short-term impacts.

1 **11.3.13.2.2 Operations**
2

3 The reduction in the developable area of the proposed Dry Lake SEZ by about 63%
4 decreases the generating capacity and annual power generation by a similar percentage and thus
5 decreases the potentially avoided emissions presented in the Draft Solar PEIS. Total revised
6 power generation capacity ranging from 508 to 915 MW is estimated for the Dry Lake SEZ for
7 various solar technologies (see Section 11.3.1). As explained in the Draft Solar PEIS, the
8 estimated amount of emissions avoided for the solar technologies evaluated depends only on the
9 megawatts of conventional fossil fuel-generated power avoided.
10

11 Table 11.3.13.2-2 in the Draft Solar PEIS provided estimates for emissions potentially
12 avoided by a solar facility. These estimates were updated by reducing emissions by about 63%,
13 as shown in the revised Table 11.3.13.2.-2. For example, for the technologies estimated to
14 require 9 acres/MW (power tower, dish engine, and PV), up to 1,077 tons of NO_x emissions per
15 year (36.53% × the low-end value of 2,949 tons/year tabulated in the Draft Solar PEIS) could be
16 avoided by full solar development of the revised area of the proposed Dry Lake SEZ. Although
17 the total emissions avoided by full solar development of the proposed SEZ are considerably
18 reduced from those presented in the Draft Solar PEIS, the conclusions of the Draft Solar PEIS
19 remain valid; that is, if the proposed Dry Lake SEZ were fully developed, the emissions avoided
20 could be substantial. Power generation from fossil fuel-fired power plants accounts for about
21 93% of the total electric power generated in Nevada, of which the contributions from natural gas
22 and coal combustion are comparable. Thus, solar facilities built in the Dry Lake SEZ could avoid
23 relatively more fossil fuel emissions than those built in other states that rely less on fossil fuel-
24 generated power.
25
26

27 **11.3.13.2.3 Decommissioning and Reclamation**
28

29 The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation
30 activities would be of short duration, and their potential air impacts would be minor and
31 temporary.
32
33

34 **11.3.13.3 SEZ-Specific Design Features and Design Feature Effectiveness**
35

36 Required programmatic design features that would reduce air quality impacts are
37 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Limiting dust generation
38 during construction and operations is a required programmatic design feature under BLM's Solar
39 Energy Program. These extensive fugitive dust control measures would keep off-site PM levels
40 as low as possible during construction.
41

42 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
43 analyses due to changes to the SEZ boundaries, and consideration of comments received as
44 applicable, no SEZ-specific design features for air quality have been identified for the proposed
45 Dry Lake SEZ. Some SEZ-specific design features may be identified through the process of
46 preparing parcels for competitive offer and subsequent project-specific analysis.

1 **TABLE 11.3.13.2-2 Annual Emissions from Combustion-Related Power Generation Avoided by**
 2 **Full Solar Development of the Proposed Dry Lake SEZ as Revised**

Area Size (acres) ^a	Capacity (MW) ^b	Power Generation (GWh/yr) ^c	Emissions Avoided (tons/yr; 10 ³ tons/yr for CO ₂) ^d			
			SO ₂	NO _x	Hg	CO ₂
5,717	508–915	890–1,603	1,256–2,261	1,077–1,939	0.007–0.013	691–1,245
Percentage of total emissions from electric power systems in the state of Nevada ^e			2.4–4.2%	2.4–4.2%	2.4–4.2%	2.4–4.2%
Percentage of total emissions from all source categories in the state of Nevada ^f			1.9–3.4%	0.72–1.3%	– ^g	1.3–2.3%
Percentage of total emissions from electric power systems in the six-state study area ^e			0.50–0.90%	0.29–0.52%	0.24–0.44%	0.26–0.47%
Percentage of total emissions from all source categories in the six-state study area ^f			0.27–0.48%	0.04–0.07%	–	0.08–0.15%

a To convert acres to km², multiply by 0.004047.

b It is assumed that the SEZ would eventually have development on 80% of the lands and that a range of 5 acres (0.020 km²) per MW (for parabolic trough technology) to 9 acres (0.036 km²) per MW (power tower, dish engine, and PV technologies) would be required.

c Assumed a capacity factor of 20%.

d Composite combustion-related emission factors for SO₂, NO_x, Hg, and CO₂ of 2.82, 2.42, 1.6 × 10⁻⁵, and 1,553 lb/MWh, respectively, were used for the state of Nevada.

e Emission data for all air pollutants are for 2005.

f Emission data for SO₂ and NO_x are for 2002, while those for CO₂ are for 2005.

g A dash indicates not estimated.

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

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11.3.14 Visual Resources

11.3.14.1 Affected Environment

The proposed Dry Lake SEZ as revised (see Figure 11.3.1.1-1) extends approximately 3.75 mi (6.0 km) north–south, is approximately 4.8 mi (7.7 km) wide and includes only the southernmost area of the originally proposed SEZ. In addition, 469 acres (1.9 km²) of floodplain and wetland within the SEZ boundaries have been identified as non-development areas. 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.

1 In addition, as a result of the boundary changes, the Dry Lake SEZ is now limited to the
2 Mojave Playas Level IV ecoregion in the northeast portion of the SEZ and the Creosote Bush-
3 Dominated Basins Level IV ecoregion in the remainder of the SEZ (Bryce et al. 2003).
4

5 The updated VRI map for the SEZ and surrounding lands is shown in Figure 11.3.14.1-1;
6 it provides information collected in BLM's 2010 VRI, which was finalized in October 2011
7 (BLM 2011a). As shown, the updated VRI values for the SEZ are VRI Class III, indicating
8 relatively moderate visual values, and VRI Class IV, indicating low visual values. The inventory
9 indicates low scenic quality for the SEZ and its immediate surroundings due to the lack of
10 topographic variability, water features, and diversity of color. Positive scenic quality attributes
11 included adjacent scenery. The SEZ, however, is located in an area that contains a high
12 sensitivity due to the adjacent Valley of the Fire State Park Offset and the I-15 transportation
13 corridor.
14

15 Lands in the Southern Nevada District Office within the 25-mi (40-km), 650-ft (198-m)
16 viewshed of the revised SEZ include 5,114 acres (20.7 km²) of VRI Class I areas, 12,208 acres
17 (49.4 km²) of VRI Class II areas, 63,453 acres (256.8 km²) of VRI Class III areas, and
18 32,216 acres (130.4 km²) of VRI Class IV areas.
19
20

21 **11.3.14.2 Impacts**

22

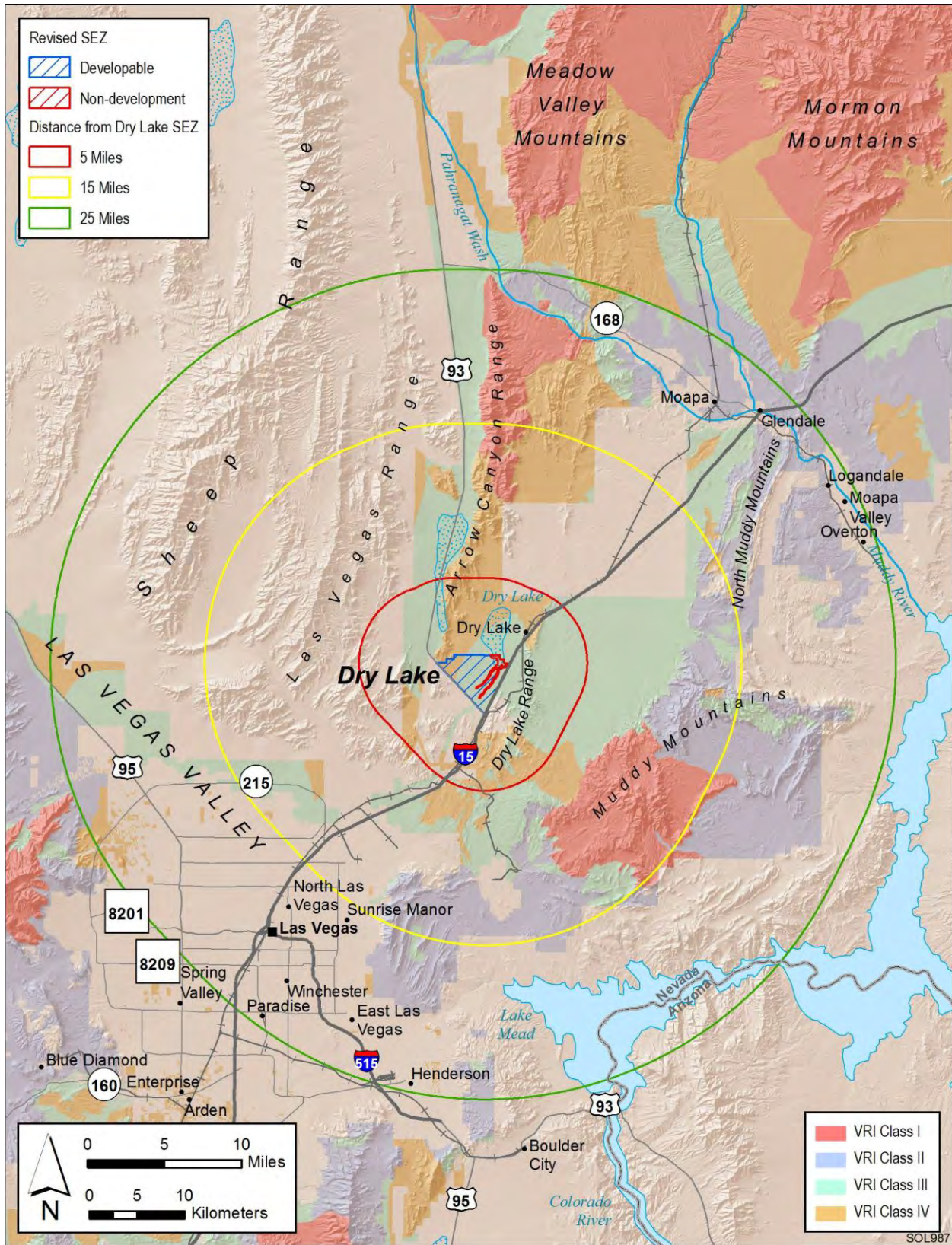
23 The reduction in size of the SEZ would substantially diminish the total visual impacts
24 associated with solar energy development in the SEZ. It would limit the total amount of solar
25 facility infrastructure that would be visible and would lessen the geographic extent of the visible
26 infrastructure.
27

28 The proposed Dry Lake SEZ, as revised in the Supplement to the Draft Solar PEIS,
29 eliminated approximately 63% of the original SEZ. The resulting visual contrast reduction for
30 any given point within view of the SEZ would vary greatly depending on the viewpoint's
31 distance and direction from the SEZ. Contrast reduction generally would be greatest for
32 viewpoints closest to the portions of the SEZ that were eliminated and especially for those that
33 had broad, wide-angle views of these areas. In general, contrast reductions also would be larger
34 for elevated viewpoints relative to non-elevated viewpoints, because the reduction in area of the
35 solar facilities would be more apparent when looking down at the SEZ than when looking
36 across it.
37
38

39 ***11.3.14.2.1 Impacts on the Proposed Dry Lake SEZ***

40

41 Although the reduction in size of the SEZ discussed in Section 11.3.14.2 would
42 substantially diminish visual contrasts associated with solar development, solar development still
43 would involve major modification of the existing character of the landscape; it likely would
44 dominate the views from most locations within the SEZ. Additional impacts would occur as a
45 result of the construction, operation, and decommissioning of related facilities, such as access
46 roads and electric transmission lines. In general, strong visual contrasts from solar development
47 still would be expected to be observed from viewing locations within the SEZ.



1

2 **FIGURE 11.3.14.1-1 Visual Resource Inventory Values for the Proposed Dry Lake SEZ as Revised**

1 ***11.3.14.2.2 Impacts on Lands Surrounding the Proposed Dry Lake SEZ***
2

3 For the Draft Solar PEIS, preliminary viewshed analyses were conducted to identify
4 which lands surrounding the proposed SEZ could have views of solar facilities in at least some
5 portion of the SEZ (see Appendixes M and N of the Draft Solar PEIS for important information
6 on assumptions and limitations of the methods used). Four viewshed analyses were conducted,
7 assuming four different heights representative of project elements associated with potential solar
8 energy technologies: PV and parabolic trough arrays, 24.6 ft (7.5 m); solar dishes and power
9 blocks for CSP technologies, 38 ft (11.6 m); transmission towers and short solar power towers,
10 150 ft (45.7 m); and tall solar power towers, 650 ft (198.1 m).
11

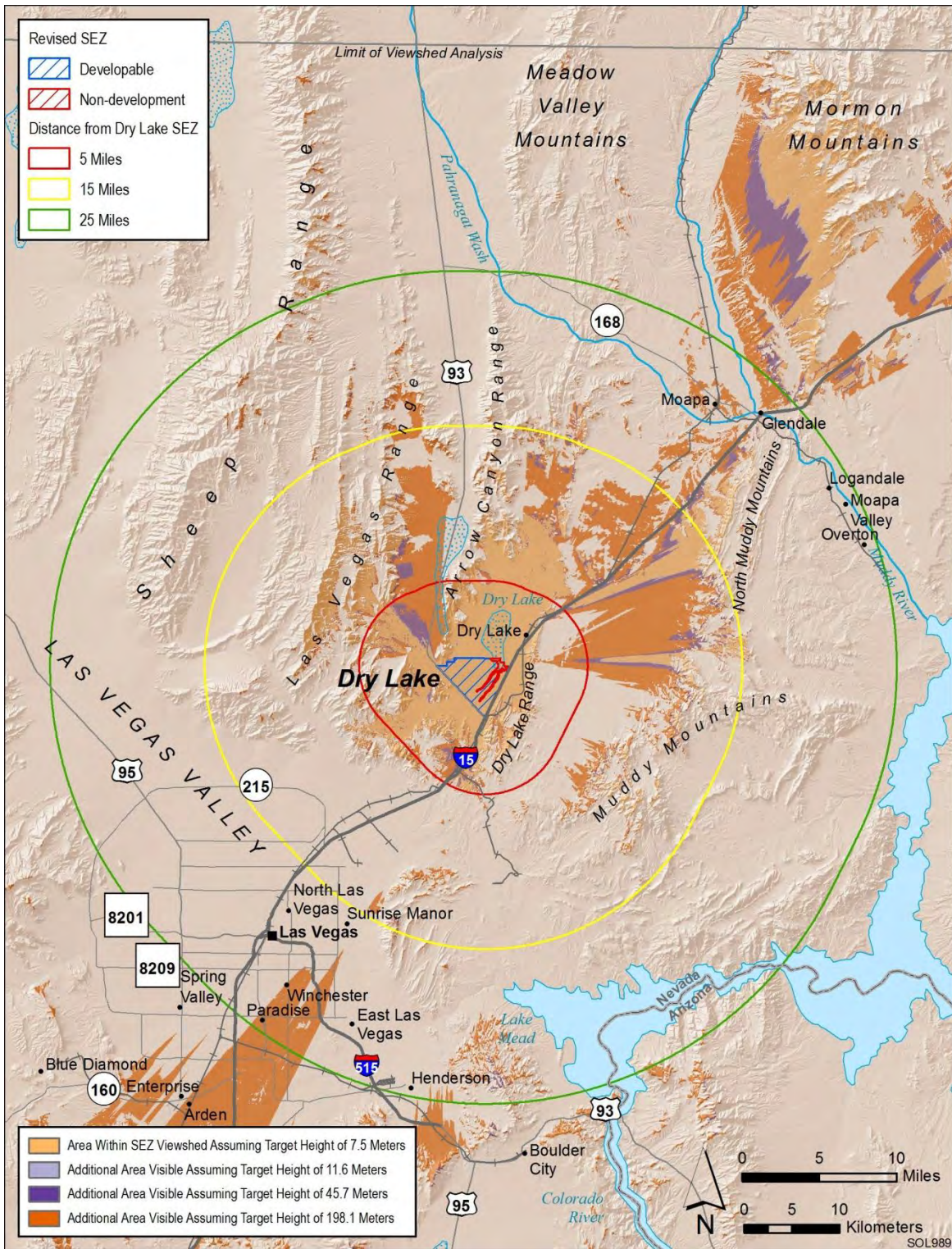
12 These same viewsheds were recalculated in order to account for the boundary changes
13 described in the Supplement to the Draft Solar PEIS. Figure 11.3.14.2-1 shows the combined
14 results of the viewshed analyses for all four solar technologies. The colored segments indicate
15 areas with clear lines of sight to one or more areas within the SEZ and from which solar facilities
16 within these areas of the SEZ would be expected to be visible, assuming the absence of screening
17 vegetation or structures and adequate lighting and other atmospheric conditions. The light brown
18 areas are locations from which PV and parabolic trough arrays located in the SEZ could be
19 visible. Solar dishes and power blocks for CSP technologies would be visible from the areas
20 shaded in light brown and the additional areas shaded in light purple. Transmission towers and
21 short solar power towers would be visible from the areas shaded light brown, light purple, and
22 the additional areas shaded in dark purple. Power tower facilities located in the SEZ could be
23 visible from areas shaded light brown, light purple, dark purple, and at least the upper portions of
24 power tower receivers from the additional areas shaded in medium brown.
25
26

27 ***11.3.14.2.3 Impacts on Selected Federal-, State-, and BLM-Designated Sensitive***
28 ***Visual Resource Areas and Other Lands and Resources***
29

30 Figure 11.3.14.2-2 shows the results of a GIS analysis that overlays selected federal-,
31 state-, and BLM-designated sensitive visual resource areas onto the combined tall solar power
32 tower (650 ft [198.1 m]) and PV and parabolic trough array (24.6 ft [7.5 m]) viewsheds to
33 illustrate which of these sensitive visual resource areas would have views of solar facilities
34 within the SEZ, and therefore potentially would be subject to visual impacts from those facilities.
35 Distance zones that correspond with BLM's VRM system-specified foreground-midground
36 distance (5 mi [8 km]), background distance (15 mi [24 km]), and a 25-mi (40-km) distance zone
37 are shown as well in order to indicate the effect of distance from the SEZ on impact levels,
38 which are highly dependent on distance.
39

40 A similar analysis was conducted for the Draft Solar PEIS. The scenic resources included
41 in the analysis were as follows:
42

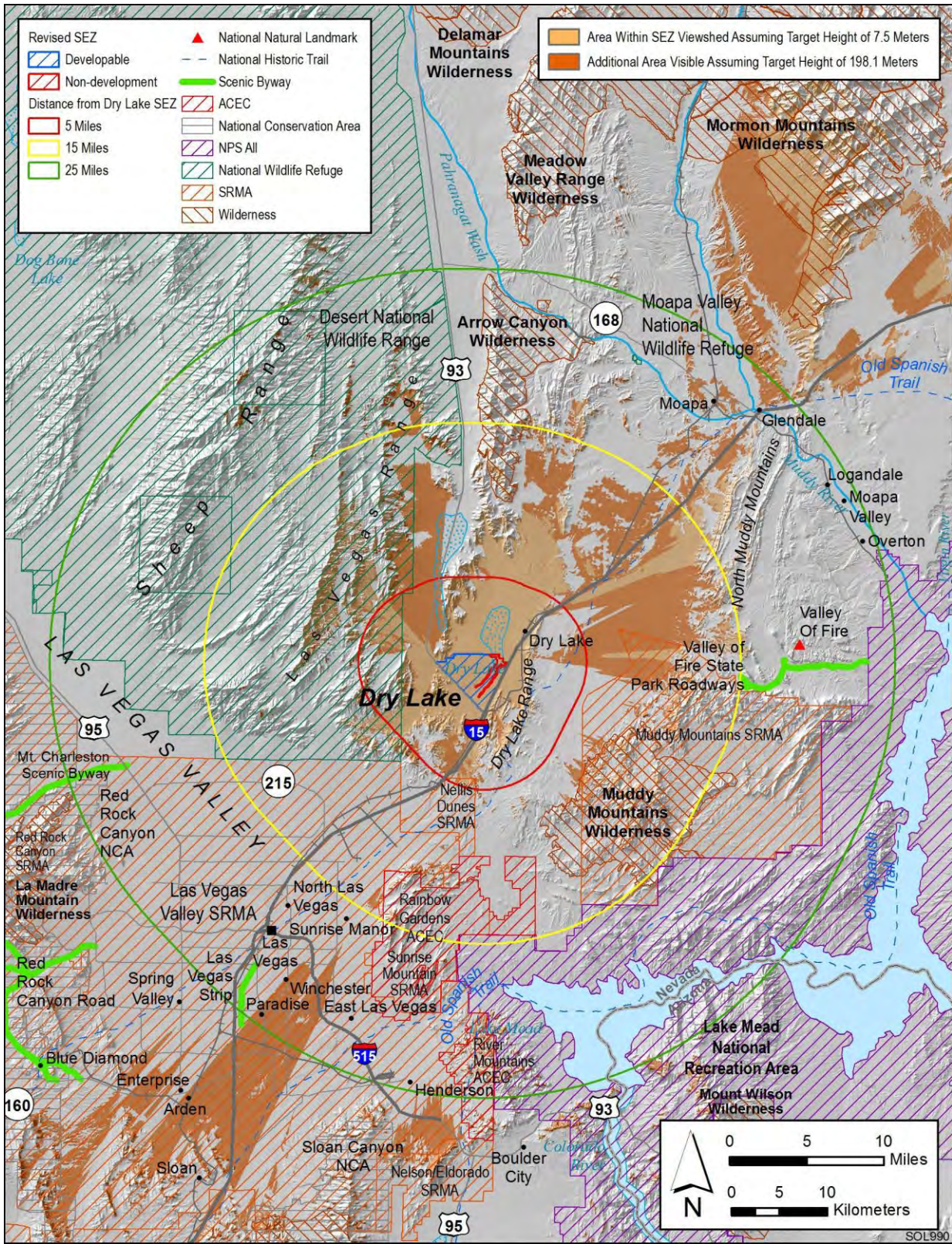
- 43 • National Parks, National Monuments, National Recreation Areas, National
44 Preserves, National Wildlife Refuges, National Reserves, National
45 Conservation Areas, National Historic Sites;
46



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FIGURE 11.3.14.2-1 Viewshed Analyses for the Proposed Dry Lake 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)



2 **FIGURE 11.3.14.2-2 Overlay of Selected Sensitive Visual Resource Areas onto Combined 650-ft**
 3 **(198.1-m) and 24.6-ft (7.5-m) Viewsheds for the Proposed Dry Lake SEZ as Revised**

- 1 • Congressionally authorized Wilderness Areas;
- 2
- 3 • Wilderness Study Areas;
- 4
- 5 • National Wild and Scenic Rivers;
- 6
- 7 • Congressionally authorized Wild and Scenic Study Rivers;
- 8
- 9 • National Scenic Trails and National Historic Trails;
- 10
- 11 • National Historic Landmarks and National Natural Landmarks;
- 12
- 13 • All-American Roads, National Scenic Byways, State Scenic Highways, and
- 14 BLM- and USFS-designated scenic highways/byways;
- 15
- 16 • BLM-designated Special Recreation Management Areas; and
- 17
- 18 • ACECs designated because of outstanding scenic qualities.
- 19

20 The results of the GIS analyses are summarized in Table 11.3.14.2-1. The change in size
21 of the SEZ alters the viewshed, such that the visibility of the SEZ and solar facilities within the
22 SEZ from the surrounding lands would be reduced.

23
24 With the reduction in size of the SEZ, solar energy development within the SEZ would be
25 expected to create minimal or weak visual contrasts for viewers within many of the surrounding
26 scenic resource areas and other resources listed in Table 11.3.14.2-1. Exceptions include the
27 Desert NWR, the Old Spanish National Historic Trail, Arrow Canyon WA, Muddy Mountains
28 WA, and the Nellis Dunes SRMA. In these areas, moderate or strong visual contrasts still could
29 occur.

30
31 In addition to these areas, impacts on other lands and resource areas also were evaluated.
32 These areas include I-15, U.S. 93, and the communities of Glendale, Moapa, Paradise, and
33 Winchester.

34 35 36 ***11.3.14.2.4 Summary of Visual Resource Impacts***

37
38 The visual contrast analysis in the Draft Solar PEIS determined that because there could
39 be multiple solar facilities within the Dry Lake SEZ, a variety of technologies employed, and a
40 range of supporting facilities required, solar development within the SEZ would make it
41 essentially industrial in appearance and would contrast strongly with the surrounding, mostly
42 natural-appearing landscape.

43
44 The reduction in size of the SEZ substantially diminishes the visual contrast associated
45 with solar facilities as seen both within the SEZ and from surrounding lands in both daytime and

1 **TABLE 11.3.14.2-1 Selected Potentially Affected Sensitive Visual Resources within a 25-mi**
 2 **(40-km) Viewshed of the Proposed Dry Lake SEZ as Revised, Assuming a Target Height of 650 ft**
 3 **(198.1 m)**

Feature Type	Feature Name (Total Acreage/Linear Distance) ^{a,b,c}	Feature Area or Linear Distance ^d		
		Visible within 5 mi	Visible Between	
			5 and 15 mi	15 and 25 mi
National Recreation Area	Lake Mead National Recreation Area (1,105,951 acres)	0 acres (0%)	0 acres (0%)	1,615 acres (0%)
National Wildlife Refuge	Desert National (1,626,903 acres)	6,272 acres (0%)	22,203 acres (1%)	4,183 acres (0%)
National Historic Trail	Old Spanish ^e (2,700 mi)	4.2 mi (0%)	7.2 mi (0%)	2.1 mi (0%)
Wilderness Areas (WAs)	Arrow Canyon (27,521 acres)	0 acres (0%)	1,011 acres (4%)	204 acres (1%)
	Muddy Mountains (44,522 acres)	0 acres (0%)	3,891 acres (9%)	0 acres (0%)
ACECs	Rainbow Gardens (38,771 acres)	0 acres (0%)	644 acres (2%)	168 acres (0%)
	River Mountains (11,029 acres)	0 acres (0%)	0 acres (0%)	1,935 acres (18%)
Scenic Byways	Bitter Springs Backcountry (28 mi) ^f	0 mi (0%)	7.7 mi (28%)	0 mi (0%)
SRMAs	Las Vegas Valley (447,244 acres)	0 acres (0%)	1,238 acres (0%)	12,433 acres (3%)
	Muddy Mountains (128,493 acres)	0 acres (0%)	13,561 acres (11%)	0 acres (0%)
	Nellis Dunes (8,924 acres)	380 acres (4%)	61 acres (1%)	0 acres (0%)
	Sunrise Mountain (33,322 acres)	0 acres (0%)	687 acres (2%)	168 acres (1%)

^a To convert acres to km², multiply by 0.004047.

^b To convert mi to km, multiply by 1.609.

^c Meadow Valley Range WA, Mormon Mountains WA, and the Las Vegas Strip Scenic Byway 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.

^d Percentage of total feature acreage or road length viewable.

^e Mileage of Old Spanish National Historic Trail (BLM 2011b).

^f Mileage of Bitter Springs Backcountry Byway (America's Byways 2012).

1 nighttime views. The reductions in visual contrast resulting from the boundary changes can be
2 summarized as follows:

- 3
- 4 • Within the Dry Lake SEZ: Contrasts experienced by viewers in the north
5 and eastern portion of the SEZ would be reduced due to the elimination of
6 9,463 acres (38.3 km²) of land within the SEZ; however, strong contrasts
7 still would result in the remaining developable area. There would be a small
8 reduction in contrasts in the northwest portion of the SEZ near I-15 due to
9 the designation of non-development lands in the SEZ.
- 10
- 11 • Lake Mead NRA: A reduction in contrasts would be anticipated due to the
12 slight reduction of the SEZ in the eastern portion; however, solar development
13 within the SEZ still would cause minimal contrast levels.
- 14
- 15 • Desert NWR: A reduction in contrasts would be anticipated due to the
16 removal of lands in the northern part of the SEZ; however, solar development
17 would still cause weak to strong contrasts, largely in part due to the proximity
18 of the NWR to the SEZ. The NWR is located less than 3 mi (5 km) from the
19 edge of the remaining portion of the SEZ. Strong levels of visual contrast
20 would be expected for some high-elevation viewpoints in the NWR, with
21 weak or moderate levels of visual contrast expected for most lower-elevation
22 viewpoints in the NWR.
- 23
- 24 • Old Spanish National Historic Trail: A reduction in contrasts would be
25 anticipated due to the removal of lands within the eastern portion of the SEZ
26 (i.e., that area to the east of I-15). However, because of the proximity of the
27 Trail to the SEZ, solar development within the SEZ still would cause minimal
28 to strong contrasts.
- 29
- 30 • Arrow Canyon WA: A reduction in contrasts would be anticipated due to the
31 elimination of the northern part of the SEZ; expected contrast levels would be
32 lowered from “weak to strong” to “weak to moderate.”
- 33
- 34 • Meadow Valley Range WA: Meadow Valley Range WA is no longer located
35 within the 25-mi (40-km) viewshed; expected contrast levels would be
36 lowered from “minimal” to “none.”
- 37
- 38 • Mormon Mountains WA: Mormon Mountains WA is no longer located within
39 the 25-mi (40-km) viewshed; expected contrast levels would be lowered from
40 “minimal” to “none.”
- 41
- 42 • Muddy Mountains WA: A reduction in contrasts would be anticipated due to
43 the elimination of land to the east of I-15; however, solar development within
44 the SEZ still would cause weak to moderate contrasts.
- 45

- 1 • Rainbow Gardens ACEC: A reduction in contrasts would be anticipated; solar
2 development within the SEZ still would cause minimal contrasts.
3
- 4 • River Mountains ACEC: A reduction in contrasts would be anticipated; solar
5 development within the SEZ still would cause minimal contrasts.
6
- 7 • Bitter Springs Backcountry Scenic Byway: A reduction in contrasts would be
8 anticipated due to the elimination of acreage in the northern and eastern
9 portions of the SEZ; however, solar development within the SEZ still would
10 cause weak contrasts.
11
- 12 • Las Vegas Strip Scenic Byway: No visual impacts would be expected.
13
- 14 • Las Vegas Valley SRMA: A reduction in contrasts would be anticipated;
15 however, solar development within the SEZ still would cause weak contrasts.
16
- 17 • Muddy Mountains SRMA: A reduction in contrasts would be anticipated due
18 to the elimination of acreage east of I-15 and in the northern portion of the
19 SEZ; expected contrast levels would be lowered from “weak to moderate” to
20 “weak.”
21
- 22 • Nellis Dunes SRMA: A reduction in contrasts would be anticipated; solar
23 development within the SEZ still would cause weak to moderate contrasts.
24
- 25 • Sunrise Mountains SRMA: A reduction in contrasts would be anticipated;
26 however, solar development within the SEZ still would cause minimal
27 contrasts.
28
- 29 • I-15: A reduction in contrasts would be anticipated as the roadway no longer
30 runs through the SEZ; instead, it serves as the eastern boundary of the SEZ,
31 thereby eliminating views of the solar development to the east of the roadway.
32 However, because of the proximity of the roadway to the SEZ, solar
33 development within the SEZ still would cause minimal to strong contrasts.
34 Stronger impacts would be experienced by viewers in areas closer to the SEZ.
35
- 36 • U.S. 93: A reduction in contrasts would be anticipated because of the
37 elimination of the northern portion of the SEZ. However, U.S. 93 still serves
38 as the western-southwestern boundary of the SEZ; in these areas, expected
39 contrasts would be quite strong with contrast lessening as one would travel
40 farther from the SEZ. As a result, however, solar development within the SEZ
41 still would cause minimal to strong contrasts.
42
- 43 • Glendale: The community of Glendale is no longer located within the 25-mi
44 (40-km) viewshed; expected contrast levels would be lowered from “minimal”
45 to “none.”
46

- 1 • Moapa: A reduction in contrasts would be anticipated because of the removal
2 of the northern portion of the SEZ; however, solar development within the
3 SEZ still would cause minimal contrasts.
- 4
- 5 • Paradise: No visual impacts would be expected.
- 6
- 7 • Winchester: No visual impacts would be expected.
- 8
- 9

10 **11.3.14.3 SEZ-Specific Design Features and Design Feature Effectiveness**

11
12 Required programmatic design features that would reduce impacts on visual resources
13 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. While application of the
14 programmatic design features would reduce potential visual impacts somewhat, the degree of
15 effectiveness of these design features can only be assessed at the site- and project-specific level.
16 Given the large scale, reflective surfaces, and strong regular geometry of utility-scale solar
17 energy facilities and the lack of screening vegetation and landforms within the SEZ viewshed,
18 siting the facilities away from sensitive visual resource areas and other sensitive viewing areas
19 would be the primary means of mitigating visual impacts. The effectiveness of other visual
20 impact mitigation measures generally would be limited.

21
22 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
23 analyses due to changes to the SEZ boundaries, and consideration of comments received as
24 applicable, no SEZ-specific design features for visual resources have been identified in this
25 Final Solar PEIS. Some SEZ-specific design features may be identified through the process of
26 preparing parcels for competitive offer and subsequent project-specific analysis.

27 28 29 **11.3.15 Acoustic Environment**

30 31 32 **11.3.15.1 Affected Environment**

33
34 The developable area of the proposed Dry Lake SEZ was reduced from 15,649 acres
35 (63 km²) to 5,717 acres (23 km²); the northern and central portions and the eastern edge of the
36 SEZ proposed in the Draft Solar PEIS were removed. With the change in the proposed
37 boundaries, distances to some of the noise receptors are greater than those presented in the Draft
38 Solar PEIS. Distances to the nearest residences near Nellis Air Force Base remain the same as in
39 the Draft Solar PEIS, but other communities such as Moapa, Moapa Valley, and Overton are
40 now several miles farther from the SEZ.

1 **11.3.15.2 Impacts**

2
3
4 **11.3.15.2.1 Construction**

5
6 The noise impact analysis in the Draft Solar PEIS assumed that a maximum of two
7 projects (6,000 acres [24.3 km²]) would be developed at any one time within the SEZ. With
8 the reduction in size of the proposed SEZ, the noise impact analysis for this Final Solar PEIS
9 assumes that only one project (3,000 acres [12.1 km²]) would be under development at a given
10 time. Thus the updated noise predictions in this Final Solar PEIS will be less than those in the
11 Draft Solar PEIS, and except as noted below for wildlife impact in specially designated areas,
12 the conclusions presented in the Draft Solar PEIS remain valid.

13
14 The distance from the updated SEZ boundary to the Coyote Springs ACEC did not
15 change (as close as 0.25 mi [0.4 km]), and the predicted construction noise level of 58 dBA at
16 the ACEC boundary still exceeds the typical daytime mean rural background level of 40 dBA.
17 On the basis of comments received and recent references, as applicable, this Final Solar PEIS
18 used an updated approximate significance threshold of 55 dBA, corresponding to the onset of
19 adverse physiological impacts (Barber et al. 2010) to update the analysis of potential noise
20 impacts on terrestrial wildlife in areas of special concern. As discussed in Section 5.10.2 of the
21 Draft and Final Solar PEIS, there is also the potential for other effects (e.g., startle or masking)
22 to occur at lower noise levels (Barber et al. 2011). Considering the approximate significance
23 threshold of 55 dBA and the potential for impacts at lower noise levels, impacts on terrestrial
24 wildlife from construction noise would have to be considered on a site-specific basis, including
25 consideration of site-specific background levels and hearing sensitivity for site-specific terrestrial
26 wildlife of concern.

27
28 With the change in SEZ boundaries, the distance to the Old Spanish National Historic
29 Trail has increased to about 2.1 mi (3.4 km), in comparison to the 1.3 mi (2.1 km) presented in
30 the Draft Solar PEIS. Construction noise levels from the SEZ are estimated to be about 34 dBA
31 at the nearest point from the SEZ to the Trail. This level is below the typical daytime mean rural
32 background level of 40 dBA. Noise levels at the Trail are most affected by I-15, which abuts the
33 southeastern SEZ boundary.

34
35 Construction noise and vibration impacts on the revised Dry Lake SEZ and SEZ-specific
36 design features would be the same or less than those presented in the Draft Solar PEIS.
37 Construction would cause negligible but unavoidable, localized, short-term noise impacts on
38 neighboring communities.

39
40
41 **11.3.15.2.2 Operations**

42
43 With the decrease in size of the proposed SEZ, the updated noise impacts estimated in
44 this Final Solar PEIS are less than those presented in the Draft Solar PEIS, and except as noted
45 below for wildlife impacts in specially designated areas, the conclusions presented in the Draft
46 Solar PEIS remain valid.

1 **Parabolic Trough and Power Tower**
2

3 Operating parabolic trough or power tower facilities with TES could result in minimal
4 adverse noise impacts on the nearest residences, depending on background noise levels and
5 meteorological conditions. However, noise from such facilities could have some adverse impacts
6 on activities on the Coyote Springs ACEC and the Old Spanish National Historic Trail.
7

8 As stated above under construction impacts, for this Final Solar PEIS an updated
9 approximate significance threshold of 55 dBA was used to evaluate potential noise impacts on
10 terrestrial wildlife in areas of special concern. Because there is no change in distance to the
11 Coyote Springs ACEC, estimated noise levels for either a parabolic trough or power tower
12 facility are the same (daytime and nighttime levels of 48 and 58 dBA, respectively). Thus, for
13 these types of facilities, nighttime operations could adversely affect wildlife in the ACEC.
14 Considering these potential impacts and the potential for impacts at lower noise levels, impacts
15 on terrestrial wildlife from operation noise from parabolic trough or power tower facilities
16 operating at nighttime would have to be considered on a project-specific basis, including
17 consideration of site-specific background levels and hearing sensitivity for site-specific terrestrial
18 wildlife of concern.
19

20 For either a parabolic trough or power tower facility near the southern SEZ boundary,
21 daytime and nighttime noise levels at the Old Spanish National Historic Trail are estimated to
22 be 35 and 45 dBA, respectively. Operations noise from a solar facility with TES would not be
23 anticipated to affect any daytime activities at the Old Spanish National Historic Trail, but could
24 have some adverse impacts on nighttime activities there. However, a considerable portion of the
25 operation noise might be masked by nearby road traffic on I-15, railroad traffic, and industrial
26 activities along I-15.
27

28
29 **Dish Engines**
30

31 The reduction in size of the proposed Dry Lake SEZ by about 63% would reduce the
32 number of dish engines by a similar percentage. Noise from a dish engine facility is not
33 anticipated to cause adverse impacts on the nearest residences. However, noise from either type
34 of facility could have some adverse impacts on activities on the Coyote Springs ACEC and the
35 Old Spanish National Historic Trail.
36

37 For a dish engine facility, the estimated noise level at the Coyote Springs ACEC is about
38 52 dBA, 2 dBA lower than the value presented in the Draft Solar PEIS due to reduced area and
39 capacity. This level indicates that adverse effects on wildlife in the ACEC from dish engine
40 facility operations are unlikely. However, considering the potential for impacts at lower noise
41 levels, impacts on terrestrial wildlife from dish engine facility noise would have to be considered
42 on a project-specific basis, including consideration of site-specific background levels and hearing
43 sensitivity for site-specific terrestrial wildlife of concern.
44

45 For a dish engine facility which would operate only during daytime hours, the estimated
46 noise level at the Old Spanish National Historic Trail is about 44 dBA. Operations noise from a

1 dish engine facility could have some adverse impacts. However, a considerable portion of the
2 operation noise might be masked by nearby road traffic on I-15, railroad traffic, and industrial
3 activities along I-15.
4

5 Changes in the proposed SEZ boundaries would not affect the discussions of vibration,
6 transformer and switchyard noise, and transmission line corona discharge presented in the Draft
7 Solar PEIS. Noise impacts from these sources would be negligible.
8
9

10 **11.3.15.2.3 Decommissioning and Reclamation**

11
12 The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation
13 activities would be of short duration, and their potential impacts would be minor and temporary.
14 Vibration impacts would be lower than those during construction and thus negligible.
15
16

17 **11.3.15.3 SEZ-Specific Design Features and Design Feature Effectiveness**

18
19 Required programmatic design features that would reduce noise impacts are described in
20 Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design
21 features will provide some protection from noise impacts.
22

23 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
24 analyses due to changes to the SEZ boundaries, and consideration of comments received as
25 applicable, no SEZ-specific design features for noise impacts in the proposed Dry Lake SEZ
26 have been identified. Some SEZ-specific design features may be identified through the process
27 of preparing parcels for competitive offer and subsequent project-specific analysis.
28
29

30 **11.3.16 Paleontological Resources**

31 32 33 **11.3.16.1 Affected Environment**

34
35 Data provided in the Draft Solar PEIS remain valid, with the following updates:
36

- 37 • The change in developable area for the proposed Dry Lake SEZ has
38 eliminated the playa deposits and significantly reduced the residual deposits
39 located on the western edge of the SEZ. The SEZ, as currently configured,
40 consists primarily of alluvial deposits.
41
- 42 • The BLM Regional Paleontologist may have additional information regarding
43 the paleontological potential of the SEZ and be able to verify the PFYC of the
44 SEZ as Class 2 and 3b as used in the Draft Solar PEIS.
45
46

1 **11.3.16.2 Impacts**

2
3 The assessment provided in the Draft Solar PEIS remains valid. Few, if any, impacts on
4 significant paleontological resources are likely to occur in 90% of the proposed Dry Lake SEZ.
5 However, a more detailed look at the geological deposits of the SEZ is needed to determine
6 whether a paleontological survey is warranted.
7

8
9 **11.3.16.3 SEZ-Specific Design Features and Design Feature Effectiveness**

10
11 Required programmatic design features that would reduce impacts on paleontological
12 resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Impacts would
13 be minimized through the implementation of required programmatic design features, including a
14 stop-work stipulation in the event that paleontological resources are encountered during
15 construction, as described in Section A.2.2 of Appendix A.
16

17 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
18 analyses due to changes to the SEZ boundaries, and consideration of comments received as
19 applicable, no SEZ-specific design features for paleontological resources have been identified.
20 If the geological deposits are determined to be as described in the Draft Solar PEIS and are
21 classified as PFYC Class 2, mitigation of paleontological resources within most of the Dry Lake
22 SEZ is not likely to be necessary. The need for and nature of any SEZ-specific design features
23 for the remaining portion of the SEZ would depend on the results of future paleontological
24 investigations. Some SEZ-specific design features may be identified through the process of
25 preparing parcels for competitive offer and subsequent project-specific analysis.
26

27 As additional information on paleontological resources (e.g., from regional
28 paleontologists or from new surveys) becomes available, the BLM will post the data to the
29 project Web site (<http://solareis.anl.gov>) for use by applicants, the BLM, and other stakeholders.
30

31
32 **11.3.17 Cultural Resources**

33
34
35 **11.3.17.1 Affected Environment**

36
37 Data provided in the Draft Solar PEIS remain valid, with the following updates:
38

- 39 • The distance from the SEZ boundary to the Moapa River Indian Reservation
40 and the Moapa River has increased by about 4 mi (6 km).
- 41
42 • The amount of land subject to archaeological survey in the SEZ has decreased
43 from 60.2%, 9,446 acres (38 km²), to 47.9%, 2,743 acres (11 km²).
- 44
45 • The number of previously recorded cultural resource sites in the SEZ has
46 decreased from 22 to 6. One site is a remnant of the congressionally

1 designated Old Spanish National Historic Trail and is eligible for listing in the
2 NRHP. The eligibility of the other five sites is unknown at this time.

- 3
- 4 • A tribally approved ethnographic study of the proposed Dry Lake SEZ
5 was conducted (SWCA and University of Arizona 2011), and a summary
6 of that study was presented in the Supplement to the Draft Solar PEIS.
7 A possible site and a number of new cultural landscapes, important
8 water sources, and traditional plants and animals were identified
9 (see Section 11.3.18 for a description of the latter). The completed
10 ethnographic study is available in its entirety on the Solar PEIS Web site
11 (<http://solareis.anl.gov>).
 - 12
 - 13 • The Arrow Canyon Range is directly connected to the Cry Ceremony and the
14 Salt Song Trail, as well as various other songs, stories, and ceremonies of the
15 Southern Paiute Tribe.
 - 16
 - 17 • The Moapa River/Muddy River is a source of healing for the Southern Paiute
18 Tribe.
 - 19
 - 20 • The Salt Song Trail does pass through the SEZ.
 - 21
 - 22 • The members of the Southern Paiute Tribe have farmed and managed
23 mesquite groves in and around the Dry Lake SEZ, and members identified
24 these groves as important cultural features. The Southern Paiute are
25 historically known for their use of irrigated agriculture and the relocation of
26 seeds to new environments, specifically seeds of mesquite trees.
 - 27
 - 28 • Additional information may be available to characterize the area surrounding
29 the proposed SEZ in the future (after the Final Solar PEIS is completed), as
30 follows:
 - 31 – Results of a Class I literature file search to better understand (1) the site
32 distribution pattern in the vicinity of the SEZ, (2) potential trail networks
33 through existing ethnographic reports, and (3) overall cultural sensitivity
34 of the landscape.
 - 35 – Verification that the surveys that have been conducted in the SEZ meet
36 current survey standards. If these surveys do meet current survey
37 standards, no Class II surveys would be recommended.
 - 38 – Identification of high-potential segments of the Old Spanish National
39 Historic Trail and viewshed analyses from key points along the Trail.
40 High-potential segments of the Trail have been identified just east of the
41 SEZ; however, it is also reported that a portion of the Trail may go
42 through the SEZ.
 - 43 – Continuation of government-to-government consultation as described in
44 Section 2.4.3 of the Supplement to the Draft Solar PEIS and IM 2012-032
45 (BLM 2011c), including follow-up to recent ethnographic studies covering

1 some SEZs in Nevada and Utah with tribes not included in the original
2 studies to determine whether those tribes have similar concerns.
3
4

5 **11.3.17.2 Impacts**

6
7 As stated in the Draft Solar PEIS, direct impacts on significant cultural resources could
8 occur in the proposed Dry Lake SEZ; however, further investigation is needed. Impacts could
9 occur on the known sites in the SEZ, and the Old Spanish National Historic Trail could be
10 affected visually depending on the location of high-potential segments of the Trail. The
11 following updates are based on the revised boundaries of the SEZ:
12

- 13 • Sixteen fewer sites are potentially affected within the reduced footprint of the
14 SEZ.
- 15
- 16 • Impacts on tribally significant mesquite groves are possible.
17
18

19 **11.3.17.3 SEZ-Specific Design Features and Design Feature Effectiveness**

20
21 Required programmatic design features that would reduce cultural impacts are described
22 in Section A.2.2 of Appendix A of this Final Solar PEIS. Programmatic design features will be
23 applied to address SEZ-specific resources and conditions, for example:
24

- 25 • For projects in the Dry Lake SEZ that are located within the viewshed of the
26 Old Spanish National Historic Trail, a National Trail inventory will be
27 required to determine the area of possible adverse impact on resources,
28 qualities, values, and associated settings of the Trail; to prevent substantial
29 interference; and to determine any areas unsuitable for development. Residual
30 impacts will be avoided, minimized, and/or mitigated to the extent practicable
31 according to program policy standards. Programmatic design features have
32 been included in BLM's Solar Energy Program to address impacts on
33 National Historic Trails (see Section A.2.2.23 of Appendix A).
34

35 Programmatic design features also assume that the necessary surveys, evaluations, and
36 consultations will occur.
37

38 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
39 analyses due to changes to the SEZ boundaries, and consideration of comments received as
40 applicable, the following SEZ-specific design feature for cultural resources has been identified:
41

- 42 • Coordination with the Trail Administration for the Old Spanish Trail and Old
43 Spanish Trail Association is recommended for identifying potential mitigation
44 strategies for avoiding or minimizing potential impacts on the congressionally
45 designated Old Spanish National Historic Trail, and also on any remnants of
46 the NRHP-listed sites associated with the Old Spanish Trail/Mormon Road

1 that may be located within or near the SEZ. Avoidance of the Old Spanish
2 Trail NRHP-listed site within the southeastern portion of the proposed SEZ is
3 recommended.
4

5 Additional SEZ-specific design features would be determined in consultation with the
6 Nevada SHPO and affected tribes and would depend on the results of future investigations.
7 Information in the ethnographic reports would suggest that impacts on the Arrow Canyon Range,
8 the Moapa/Muddy River, the Salt Song Trail, and culturally sensitive plant and animal species
9 would need to be avoided, minimized, or otherwise mitigated if solar energy development were
10 to be initiated in the proposed Dry Lake SEZ. Some SEZ-specific design features may be
11 established through the process of preparing parcels for competitive offer and subsequent
12 project-specific analysis.
13
14

15 **11.3.18 Native American Concerns**

16 **11.3.18.1 Affected Environment**

17
18 Data presented in the Draft Solar PEIS remain valid, with the following updates:
19
20

- 21
22 • A tribally approved ethnographic study of the proposed Dry Lake SEZ was
23 conducted (SWCA and University of Arizona 2011), and a summary of that
24 study was presented in the Supplement to the Draft Solar PEIS. A possible site
25 and a number of new cultural landscapes, important water sources, and
26 traditional plants and animals were identified. The completed ethnographic
27 study is available in its entirety on the Solar PEIS Web site
28 (<http://solareis.anl.gov>).
29
- 30 • The tribal representatives from the Moapa Band of Paiute Indians believe that
31 all the cultural resources and landscapes within the proposed Dry Lake SEZ
32 are important in helping the Southern Paiute understand their past, present,
33 and future.
34
- 35 • The tribal representatives of the Moapa Band of Paiute Indians believe that
36 the proposed Dry Lake SEZ area should be managed as a spiritual cultural
37 landscape and that areas significant to the Southern Paiute (e.g., Arrow
38 Canyon Range and Potato Woman) should be nominated as traditional cultural
39 properties. The Moapa Band of Paiute Indians would like to work with the
40 BLM in restricting access to the proposed Dry Lake SEZ, as well as the
41 surrounding area, from OHVs and eliminating the use of this area as a
42 shooting range. In addition, the Southern Paiute would like to co-manage the
43 mesquite groves and other traditionally important plant resources within the
44 area, with the BLM (SWCA and University of Arizona 2011).
45

- 1 • The Southern Paiute have identified the Arrow Canyon Range as associated
2 with songs, stories, and ceremonies of the Southern Paiute people as well as
3 home to the Nah’gah, a small variety of mountain sheep that live exclusively
4 within the range. The Nah’gah are created by the Southern Paiute Creator
5 Being and the geological feature Potato Woman, located northeast of the
6 Arrow Canyon Range. Potato Woman has a permanent responsibility to create
7 the Nah’gah, which bring songs, stories, and medicine to the Southern Paiute
8 people and serve as spirit helpers to shaman.
9
- 10 • The Southern Paiute have a spiritual connection to water. They believe that
11 *Puha* (power) follows the flow of water, connecting landscapes and elements
12 associated with those landscapes. The Apex Pleistocene Lake, the Muddy
13 River, the Colorado River, the Virgin River, Hogan Springs, and Warm
14 Springs are identified as important sources of water for the Southern Paiute.
15
- 16 • The Old Spanish Trail holds significance in Southern Paiute history as
17 European movement along this Trail resulted in polluted water, the
18 destruction of many Southern Paiute agricultural areas, and the spread of
19 disease among Native groups in the area. Additional European exploration
20 along this route led to the establishment of the Mormon Road, which led to
21 further decimation of Native American groups and the eventual removal of the
22 Southern Paiute to the Moapa River Indian Reservation.
23
- 24 • Arrow Canyon holds special significance to Southern Paiute peoples because
25 it is home to Tabletop Mountain, where Native Americans from the
26 surrounding area gathered to participate in the Ghost Dance in 1890.
27
- 28 • Mount Charleston, located approximately south–southwest of the SEZ, and
29 Coyote’s Jaw, located north of the SEZ in the Pahrnagat Range, have been
30 identified as creation places for the Southern Paiute.
31
- 32 • The members of the Southern Paiute Tribe have farmed and managed
33 mesquite groves in and around the Dry Lake SEZ, and members identified
34 these groves as important cultural features. The Southern Paiute are
35 historically known for their use of irrigated agriculture and the relocation of
36 seeds to new environments, specifically seeds of mesquite trees.
37
- 38 • In addition to those listed in Table 11.3.18.1-2 of the Draft Solar PEIS, the
39 following traditional plants have been identified: California barrel cactus
40 (*Ferocactus cylindraceus*), desert globemallow (*Sphaeralcea ambigua*),
41 hedgehog cactus (*Enchinocereus engelmannii*), spiny chorianthe (*Chorizanthe*
42 *rigida*), and Western wheatgrass (*Pascopyrum smithii*).
43
- 44 • In addition to those listed in Table 11.3.18.1-3 of the Draft Solar PEIS, the
45 following traditional animals have been identified: coyote (*Canus latrans*),
46 gray fox (*Urocyon cinereoargenteus*), mountain sheep (*Ovis* spp.), white-

1 tailed antelope squirrel (*Spermophilus variegates*), woodrat (*Neotoma* sp.),
2 common raven (*Corvus corax*), American kestrel (*Falco sparverius*), cactus
3 wren (*Campylorhynchus brunneicapillus*), Gambel’s quail (*Callipepla*
4 *gambelii*), great horned owl (*Bubo virginianus*), horned lark (*Eremophila*
5 *alpestris*), killdeer (*Charadrius vociferous*), lesser nighthawk (*Chordeiles*
6 *acutipennis*), loggerhead strike (*Lanius ludovicianus*), rock wren (*Salpinctes*
7 *obsoletus*), Say’s phoebe (*Sayornis saya*), northern mockingbird (*Mimus*
8 *polyglottos*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes*
9 *aura*), Western kingbird (*Tyrannus verticalis*), and rattlesnake (*Crotalus* sp.).

11.3.18.2 Impacts

14 The description of potential concerns provided in the Draft Solar PEIS remains valid.
15 During past project-related consultation, the Southern Paiute have expressed concerns about
16 project impacts on a variety of resources, including important food plants, medicinal plants,
17 plants used in basketry, plants used in construction, large game animals, small game animals,
18 birds, and sources of clay, salt, and pigments. While no comments specific to the proposed Dry
19 Lake SEZ have been received from Native American tribes to date, the Paiute Indian Tribe of
20 Utah has asked to be kept informed of Solar PEIS developments.

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

- 25 • Tribal representatives believe that solar energy development within the Dry
26 Lake SEZ will adversely affect water sources such as the Apex Pleistocene
27 Lake, Muddy River, Colorado River, and Virgin River; geological features
28 such as the Arrow Canyon Range and Potato Woman; important places such
29 as the Salt Song Trail and their mesquite groves; historical sites such as the
30 Old Spanish Trail/Mormon Road, the railroad, Tabletop Mountain in Arrow
31 Canyon, and the Moapa River Reservation; and traditional plant and animal
32 resources (SWCA and University of Arizona 2011).
- 34 • OHV access to the area, use of the area as a shooting range, exhaust from the
35 freeway, freeway traffic, the SNWA, and energy from the electrical lines have
36 been identified by tribal representatives of the Moapa Band of Paiute Indians
37 as currently having impacts on cultural resources, cultural landscapes,
38 traditionally important plants and animals, and water sources (SWCA and
39 University of Arizona 2011).
- 41 • Development within the proposed Dry Lake SEZ could result in visual
42 impacts on the Arrow Canyon Range and Arrow Canyon. Any impacts on the
43 Arrow Canyon Range directly affect Potato Woman and the Nah’gah because
44 they are all connected.

- 1 • Development within the proposed Dry Lake SEZ could affect the Nah'gah's
2 natural habitat and therefore the spiritual nature of the Arrow Canyon Range,
3 Potato Woman, and the stories and medicine of the Southern Paiute.
4
- 5 • Development within the proposed Dry Lake SEZ may affect the spiritual
6 connection that the Southern Paiute have to water, as well as the quantity of
7 water naturally stored in underground aquifers. The Southern Paiute are
8 concerned that energy development within the area will greatly reduce the
9 amount of water that is available to the Tribe and to plants and animals in the
10 valley.
11
- 12 • Development of a project area within the SEZ will directly affect culturally
13 important plant and animal resources because it will likely require the grading
14 of the project area and the possible removal of the mesquite grove.
15
16

17 **11.3.18.3 SEZ-Specific Design Features and Design Feature Effectiveness**

18
19 Tribal representatives believe that solar energy development within the proposed Dry
20 Lake SEZ will adversely affect identified and unidentified archaeological resources; water
21 sources; culturally important geological features; and traditional plant, mineral, and animal
22 resources (SWCA and University of Arizona 2011). Required programmatic design features
23 that would reduce impacts on Native American concerns are described in Section A.2.2 of
24 Appendix A of this Final Solar PEIS. For example, impacts would be minimized through the
25 avoidance of sacred sites, water sources, and tribally important plant and animal species.
26 Programmatic design features require that the necessary surveys, evaluations, and consultations
27 would occur. The affected tribes would be notified regarding the results of archaeological
28 surveys, and they would be contacted immediately upon the discovery of Native American
29 human remains and associated cultural items.
30

31 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
32 analyses due to changes to the SEZ boundaries, and consideration of comments received as
33 applicable, the following proposed SEZ-specific design features to address Native American
34 concerns have been identified:
35

- 36 • The Moapa Band of Paiute Indians have specifically requested formal
37 government-to-government contact when construction or land management
38 projects are being proposed on and/or near the Muddy River, the Virgin River,
39 the Colorado River, the Arrow Canyon Range, Potato Woman, and the Apex
40 Pleistocene Lake (SWCA and University of Arizona 2011).
41
- 42 • Compensatory programs of mitigation could be implemented to provide
43 access to and/or deliberately cultivate patches of culturally significant plants,
44 like the mesquite groves present within the Dry Lake SEZ, on other public
45 lands nearby where tribes have ready access.
46

- 1 • In addition, the BLM should consider assisting the Moapa Band of Paiute
2 Indians with the preparation of forms to nominate identified sacred places as
3 traditional cultural properties, if it is found that all the proper eligibility
4 requirements are met.
5

6 The need for and nature of additional SEZ-specific design features would be determined
7 during government-to-government consultation with the affected tribes as part of the process of
8 preparing parcels for competitive offer and subsequent project-specific analysis. Potentially
9 significant sites and landscapes in the vicinity of the SEZ associated with the Salt Song and other
10 trails and trail features; the Moapa Valley; water sources, such as the Apex Pleistocene Lake,
11 Muddy River, Colorado River, and Virgin River; geological features, such as the Arrow Canyon
12 Range and Potato Woman; historical sites such as the Old Spanish Trail/Mormon Road, the
13 railroad, Tabletop Mountain in Arrow Canyon, and the Moapa River Reservation; and traditional
14 plant and animal resources, including the mesquite groves, should be considered and discussed
15 during consultation.
16

17

18 **11.3.19 Socioeconomics**

19

20

21 **11.3.19.1 Affected Environment**

22

23 Although the boundaries of the Dry Lake SEZ have been reduced compared to the
24 boundaries given in the Draft Solar PEIS, the socioeconomic ROI, the area in which site
25 employees would live and spend their wages and salaries and into which any in-migration
26 would occur, includes the same counties and communities as described in the Draft Solar PEIS,
27 meaning that no updates to the affected environment information given in the Draft Solar PEIS
28 are required.
29

30

31 **11.3.19.2 Impacts**

32

33 Socioeconomic resources in the ROI around the SEZ could be affected by solar energy
34 development through the creation of direct and indirect employment and income, generation of
35 direct sales and income taxes, SEZ acreage rental and capacity payments to the BLM,
36 in-migration of solar facility workers and their families, and impacts on local housing markets
37 and community service employment. The impact assessment has been updated in the following
38 sections.
39

40

41 **11.3.19.2.1 Solar Trough**

42

43

44 **Construction**

45

46 Total construction employment impacts in the ROI (including direct and indirect impacts)
47 from the use of solar trough technologies would be up to 2,921 jobs (Table 11.3.19.2-1).

1
2
3

TABLE 11.3.19.2-1 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Dry Lake SEZ as Revised with Trough Facilities

Parameter	Maximum Annual Construction Impacts ^a	Annual Operations Impacts ^b
Employment (no.)		
Direct	1,744	199
Total	2,921	300
Income ^c		
Total	180.8	11.3
Direct state taxes ^c		
Sales	1.2	0.2
BLM payments ^{c,d}		
Rental	NA ^e	1.1
Capacity ^f	NA	6.0
In-migrants (no.)	743	25
Vacant housing ^g (no.)	257	16
Local community service employment		
Teachers (no.)	6	0
Physicians (no.)	2	0
Public safety (no.)	2	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 600 MW (corresponding to 3,000 acres [12 km²] of land disturbance) could be built.

^b Operations impacts were based on full build-out of the site, producing a total output of 915 MW.

^c Values are reported in \$ million 2008.

^d There is currently no individual income tax in Nevada.

^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 2010), 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.

4

1 Construction activities would constitute 0.2% of total ROI employment. A solar facility would
2 also produce \$180.8 million in income. Direct sales taxes would be \$1.2 million.
3

4 Given the scale of construction activities and the low likelihood that the entire
5 construction workforce in the required occupational categories would be available in the local
6 community, construction of a solar facility would mean that some in-migration of workers and
7 their families from outside the ROI would be required, with up to 743 persons in-migrating into
8 the ROI. Although in-migration may potentially affect local housing markets, the relatively small
9 number of in-migrants and the availability of temporary accommodations (hotels, motels, and
10 mobile home parks) in the ROI mean that the impact of solar facility construction on the number
11 of vacant rental housing units would not be expected to be large, with up to 257 rental units
12 expected to be occupied in the ROI. This occupancy rate would represent 0.5% of the vacant
13 rental units expected to be available in the ROI.
14

15 In addition to the potential impact on housing markets, in-migration would affect
16 community service employment (education, health, and public safety). An increase in such
17 employment would be required to meet existing levels of service in the ROI. Accordingly, up to
18 six new teachers, two physicians, and two public safety employee (career firefighters and
19 uniformed police officers) would be required in the ROI. These increases would represent less
20 than 0.1% of total ROI employment expected in these occupations.
21
22

23 **Operations**

24
25 Total operations employment impacts in the ROI (including direct and indirect
26 impacts) of a full build-out of the SEZ using solar trough technologies would be 300 jobs
27 (Table 11.3.19.2-1). Such a solar facility would also produce \$11.3 million in income.
28 Direct sales taxes would be \$0.2 million. On the basis of fees established by the BLM in its Solar
29 Energy Interim Rental Policy (BLM 2010), acreage rental payments would be \$1.1 million,
30 and solar generating capacity payments would total at least \$6.0 million.
31

32 As for the construction workforce, operation of a solar facility likely would require
33 some in-migration of workers and their families from outside the ROI, with up to 25 persons
34 in-migrating into the ROI. Although in-migration may potentially affect local housing markets,
35 the relatively small number of in-migrants and the availability of temporary accommodations
36 (hotels, motels, and mobile home parks) mean that the impact of solar facility operation on the
37 number of vacant owner-occupied housing units would not be expected to be large, with up to
38 16 owner-occupied units expected to be occupied in the ROI.
39

40 No new community service employment would be required to meet existing levels of
41 service in the ROI.
42
43
44

1 **11.3.19.2.2 Power Tower**

2
3
4 **Construction**

5
6 Total construction employment impacts in the ROI (including direct and indirect impacts)
7 from the use of power tower technologies would be up to 1,163 jobs (Table 11.3.19.2-2).
8 Construction activities would constitute 0.1% of total ROI employment. Such a solar facility
9 would also produce \$72.0 million in income. Direct sales taxes would be \$0.5 million.

10
11 Given the scale of construction activities and the low likelihood that the entire
12 construction workforce in the required occupational categories would be available in the ROI,
13 construction of a solar facility would mean that some in-migration of workers and their families
14 from outside the ROI would be required, with up to 296 persons in-migrating into the ROI.
15 Although in-migration may potentially affect local housing markets, the relatively small number
16 of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile
17 home parks) mean that the impact of solar facility construction on the number of vacant rental
18 housing units would not be expected to be large, with up to 102 rental units expected to be
19 occupied in the ROI. This occupancy rate would represent 0.2% of the vacant rental units
20 expected to be available in the ROI.

21
22 In addition to the potential impact on housing markets, in-migration would affect
23 community service (education, health, and public safety) employment. An increase in such
24 employment would be required to meet existing levels of service in the ROI. Accordingly, up
25 to three new teachers, one physician, and one public safety employee would be required in the
26 ROI. These increases would represent less than 0.1% of total ROI employment expected in
27 these occupations.

28
29
30 **Operations**

31
32 Total operations employment impacts in the ROI (including direct and indirect
33 impacts) of a full build-out of the SEZ using power tower technologies would be 137 jobs
34 (Table 11.3.19.2-2). Such a solar facility would also produce \$4.7 million in income. Direct
35 sales taxes would be less than \$0.1 million. On the basis of fees established by the BLM
36 (BLM 2010), acreage rental payments would be \$1.1 million, and solar generating capacity
37 payments would total at least \$3.3 million.

38
39 As for the construction workforce, operation of a solar facility likely would require
40 some in-migration of workers and their families from outside the ROI, with up to 36 persons
41 in-migrating into the ROI. Although in-migration may potentially affect local housing markets,
42 the relatively small number of in-migrants and the availability of temporary accommodations
43 (hotels, motels, and mobile home parks) mean that the impact of solar facility operation on the
44 number of vacant owner-occupied housing units would not be expected to be large, with up to
45 32 owner-occupied units expected to be required in the ROI.

1
2
3

TABLE 11.3.19.2-2 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Dry Lake SEZ as Revised with Power Tower Facilities

Parameter	Maximum Annual Construction Impacts ^a	Annual Operations Impacts ^b
Employment (no.)		
Direct	695	103
Total	1,163	137
Income ^c		
Total	72.0	4.7
Direct state taxes ^c		
Sales	0.5	<0.1
BLM payments ^{c,d}		
Rental	NA ^e	1.1
Capacity ^f	NA	3.3
In-migrants (no.)	296	13
Vacant housing ^g (no.)	102	8
Local community service employment		
Teachers (no.)	3	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 333 MW (corresponding to 3,000 acres [12 km²] of land disturbance) could be built.

^b Operations impacts were based on full build-out of the site, producing a total output of 508 MW.

^c Values are reported in \$ million 2008.

^d There is currently no individual income tax in Nevada.

^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 2010), assuming a solar facility with no storage capability and full build-out of the site. Projects with three 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.

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

3 4 5 **11.3.19.2.3 Dish Engine**

6 7 8 **Construction**

9
10 Total construction employment impacts in the ROI (including direct and indirect
11 impacts) from the use of dish engine technologies would be up to 473 jobs (Table 11.3.19.2-3).
12 Construction activities would provide less than 0.1% of total ROI employment. Such a solar
13 facility would also produce \$29.3 million in income. Direct sales taxes would be \$0.2 million.
14

15 Given the scale of construction activities and the low likelihood that the entire
16 construction workforce in the required occupational categories would be available in the ROI,
17 construction of a solar facility would mean that some in-migration of workers and their families
18 from outside the ROI would be required, with up to 120 persons in-migrating into the ROI.
19 Although in-migration may potentially affect local housing markets, the relatively small number
20 of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile
21 home parks) mean that the impact of solar facility construction on the number of vacant rental
22 housing units would not be expected to be large, with up to 42 rental units expected to be
23 occupied in the ROI. This occupancy rate would represent 0.1% of the vacant rental units
24 expected to be available in the ROI.
25

26 In addition to the potential impact on housing markets, in-migration would affect
27 community service (education, health, and public safety) employment. An increase in such
28 employment would be required to meet existing levels of service in the ROI. Accordingly, up to
29 one new teacher would be required in the ROI. This increase would represent less than 0.1% of
30 total ROI employment expected in these occupations.
31

32 33 **Operations**

34
35 Total operations employment impacts in the ROI (including direct and indirect
36 impacts) of a full build-out of the SEZ using dish engine technologies would be 133 jobs
37 (Table 11.3.19.2-3). Such a solar facility would also produce \$4.6 million in income. Direct sales
38 taxes would be less than \$0.1 million. On the basis of fees established by the BLM (BLM 2010),
39 acreage rental payments would be \$1.1 million, and solar generating capacity payments would
40 total at least \$3.3 million.
41

42 As for the construction workforce, operation of a dish engine solar facility likely would
43 require some in-migration of workers and their families from outside the ROI, with up to
44 13 persons in-migrating into the ROI. Although in-migration may potentially affect local
45 housing markets, the relatively small number of in-migrants and the availability of temporary
46 accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility

1
2
3

TABLE 11.3.19.2-3 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Dry Lake SEZ as Revised with Dish Engine Facilities

Parameter	Maximum Annual Construction Impacts ^a	Annual Operations Impacts ^b
Employment (no.)		
Direct	282	100
Total	473	133
Income ^c		
Total	29.3	4.6
Direct state taxes ^c		
Sales	0.2	<0.1
BLM payments ^{c,d}		
Rental	NA ^e	1.1
Capacity ^f	NA	3.3
In-migrants (no.)	120	13
Vacant housing ^g (no.)	42	8
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 333 MW (corresponding to 3,000 acres [12 km²] of land disturbance) could be built.

^b Operations impacts were based on full build-out of the site, producing a total output of 508 MW.

^c Values are reported in \$ million 2008.

^d There is currently no individual income tax in Nevada.

^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 2010), assuming a solar facility with no storage capability and full build-out of the site. Projects with three 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.

4

1 operation on the number of vacant owner-occupied housing units would not be expected to be
2 large, with up to 8 owner-occupied units expected to be required in the ROI.

3
4 No new community service employment would be required to meet existing levels of
5 service in the ROI.

6 7 8 **11.3.19.2.4 Photovoltaic**

9 10 11 **Construction**

12
13 Total construction employment impacts in the ROI (including direct and indirect impacts)
14 from the use of PV technologies would be up to 221 jobs (Table 11.3.19.2-4). Construction
15 activities would constitute less than 0.1 % of total ROI employment. Such a solar development
16 would also produce \$13.7 million in income. Direct sales taxes would be \$0.1 million.

17
18 Given the scale of construction activities and the low likelihood that the entire
19 construction workforce in the required occupational categories would be available in the ROI,
20 construction of a solar facility would mean that some in-migration of workers and their families
21 from outside the ROI would be required, with up to 56 persons in-migrating into the ROI.
22 Although in-migration may potentially affect local housing markets, the relatively small number
23 of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile
24 home parks) mean that the impact of solar facility construction on the number of vacant rental
25 housing units would not be expected to be large, with up to 19 rental units expected to be
26 occupied in the ROI. This occupancy rate would represent less than 0.1% of the vacant rental
27 units expected to be available in the ROI.

28
29 No new community service employment would be required to meet existing levels of
30 service in the ROI.

31 32 33 **Operations**

34
35 Total operations employment impacts in the ROI (including direct and indirect impacts)
36 of a full build-out of the SEZ using PV technologies would be 13 jobs (Table 11.3.19.2-4). Such
37 a solar facility would also produce \$0.5 million in income. Direct sales taxes would be less than
38 \$0.1 million. On the basis of fees established by the BLM in its Solar Energy Interim Rental
39 Policy (BLM 2010), acreage rental payments would be \$1.1 million, and solar generating
40 capacity payments would total at least \$2.7 million.

41
42 As for the construction workforce, operation of a PV solar facility would likely require
43 some in-migration of workers and their families from outside the ROI, with up to one person
44 in-migrating into the ROI. Although in-migration may potentially affect local housing markets,
45 the very small number of in-migrants and the availability of temporary accommodations (hotels,
46 motels, and mobile home parks) mean that the impact of solar facility operation on the number of

1
2
3

TABLE 11.3.19.2-4 ROI Socioeconomic Impacts Assuming Full Build-out of the Proposed Dry Lake SEZ as Revised with PV Facilities

Parameter	Maximum Annual Construction Impacts ^a	Annual Operations Impacts ^b
Employment (no.)		
Direct	132	10
Total	221	13
Income ^c		
Total	13.7	0.5
Direct state taxes ^c		
Sales	0.1	<0.1
BLM payments ^{c,d}		
Rental	NA ^e	1.1
Capacity ^f	NA	2.7
In-migrants (no.)	56	1
Vacant housing ^g (no.)	19	1
Local community service employment		
Teachers (no.)	0	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 333 MW (corresponding to 3,000 acres [12 km²] of land disturbance) could be built.

^b Operations impacts were based on full build-out of the site, producing a total output of 508 MW.

^c Values are reported in \$ million 2008.

^d There is currently no individual income tax in Nevada.

^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 2010), assuming a solar facility with no storage capability and full build-out of the site. Projects with three 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.

1 vacant owner-occupied housing units would not be expected to be large, with up to one owner-
2 occupied unit expected to be required in the ROI.

3
4 No new community service employment would be required to meet existing levels of
5 service in the ROI.
6

7 8 **11.3.19.3 SEZ-Specific Design Features and Design Feature Effectiveness** 9

10 Required programmatic design features that would reduce socioeconomic impacts are
11 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
12 programmatic design features will reduce the potential for socioeconomic impacts during all
13 project phases.
14

15 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
16 analyses due to changes to the SEZ boundaries, and consideration of comments received as
17 applicable, no SEZ-specific design features to address socioeconomic impacts have been
18 identified for the proposed Dry Lake SEZ. Some SEZ-specific design features may be identified
19 through the process of preparing parcels for competitive offer and subsequent project-specific
20 analysis.
21

22 23 **11.3.20 Environmental Justice** 24

25 26 **11.3.20.1 Affected Environment** 27

28 The data presented in the Draft Solar PEIS are not substantially changed due to the
29 change in boundaries of the proposed Dry Lake SEZ. There are no minority or low-income
30 populations in the Arizona or Nevada portions of the 50-mi (80-km) radius of the SEZ as a
31 whole. There are block groups with minority populations more than 20 percentage points higher
32 than the state average located in the City of Las Vegas, to the west of the downtown area, and in
33 one block group to the northeast of the city. Census block groups within the 50-mi (80-km)
34 radius where the low-income population is more than 20 percentage points higher than the state
35 average are located in the City of Las Vegas, in the downtown area.
36

37 38 **11.3.20.2 Impacts** 39

40 Potential impacts (e.g., from noise and dust during construction and operations, visual
41 impacts, cultural impacts, and effects on property values) on low-income and minority
42 populations could be incurred as a result of the construction and operation of solar facilities
43 involving each of the four technologies. Impacts are likely to be small to moderate, and
44 there are no minority populations defined by CEQ guidelines (CEQ 1997) and no low-income
45 populations (Section 11.3.20.1) within the 50-mi (80-km) radius around the boundary of the

1 SEZ. This means that any adverse impacts of solar projects would not disproportionately affect
2 minority and/or low-income populations.
3
4

5 **11.3.20.3 SEZ-Specific Design Features and Design Feature Effectiveness**

6

7 Required programmatic design features that would reduce potential environmental justice
8 impacts are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
9 programmatic design features will reduce the potential for environmental justice impacts.
10

11 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
12 analyses due to changes to the SEZ boundaries, and consideration of comments received as
13 applicable, no SEZ-specific design features for environmental justice have been identified.
14 Some SEZ-specific design features may be identified through the process of preparing parcels
15 for competitive offer and subsequent project-specific analysis.
16
17

18 **11.3.21 Transportation**

19
20

21 **11.3.21.1 Affected Environment**

22

23 The reduction in developable area of the proposed Dry Lake SEZ does not change the
24 information on affected environment provided in the Draft Solar PEIS.
25
26

27 **11.3.21.2 Impacts**

28

29 As stated in the Draft Solar PEIS, the primary transportation impacts are anticipated to be
30 from commuting worker traffic. Single projects could involve up to 1,000 workers each day,
31 with an additional 2,000 vehicle trips per day (maximum). The volume of traffic on I-15 would
32 represent an increase in traffic of about 10% in the area of the SEZ. Such traffic levels would
33 represent a 100% increase in the traffic level experienced on U.S. 93 north of its junction with
34 I-15 if all project traffic were routed through U.S. 93. Because higher traffic volumes would be
35 experienced during shift changes, traffic on I-15 could experience minor slowdowns during these
36 time periods near exits in the vicinity of the SEZ where projects are located. Local road
37 improvements would be necessary in the vicinity of exits off I-15 or on any portion of U.S. 93
38 that might be developed so as not to overwhelm the local access roads near any site access
39 point(s).
40

41 Solar development within the SEZ would affect public access along OHV routes that are
42 designated open and available for public use. Although open routes crossing areas granted
43 ROWs for solar facilities could be redesignated as closed (see Section 5.5.1 of the Draft Solar
44 PEIS), a programmatic design feature has been included under Recreation (Section A.2.2.6.1 of
45 Appendix A) that requires consideration of replacement of lost OHV route acreage and of access
46 across and to public lands.
47

1 **11.3.21.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce transportation impacts are
4 described in Section A.2.2 of Appendix A of this Final Solar PEIS. The programmatic design
5 features, including local road improvements, multiple site access locations, staggered work
6 schedules, and ride-sharing, would all provide some relief to traffic congestion on local roads
7 leading to the SEZ. Depending on the location of solar facilities within the SEZ, more specific
8 access locations and local road improvements could be implemented.
9

10 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
11 analyses due to changes to the SEZ boundaries, and consideration of comments received as
12 applicable, no SEZ-specific design features to address transportation impacts in the proposed
13 Dry Lake SEZ have been identified. Some SEZ-specific design features may be identified
14 through the process of preparing parcels for competitive offer and subsequent project-specific
15 analysis.
16

17
18 **11.3.22 Cumulative Impacts**
19

20 The analysis of potential impacts in the vicinity of the proposed Dry Lake SEZ presented
21 in the Draft Solar PEIS is still generally applicable for this Final Solar PEIS, although the
22 impacts would be decreased because the size of the developable area of the proposed SEZ
23 has been reduced to 5,717 acres (23 km²). The following sections include an update to the
24 information presented in the Draft Solar PEIS regarding cumulative effects for the proposed
25 Dry Lake SEZ.
26

27
28 **11.3.22.1 Geographic Extent of the Cumulative Impact Analysis**
29

30 The geographic extent of the cumulative impact analysis has not changed. The extent
31 varies on the basis of the nature of the resource being evaluated and the distance at which the
32 impact may occur (e.g., air quality impacts may have a greater geographic extent than impacts on
33 visual resources). The BLM, USFWS, NPS, and DoD administer most of the land around the
34 SEZ; there are also some nearby tribal lands at the Moapa River Indian Reservation adjacent to
35 the northeast boundary of the SEZ. The BLM administers approximately 45.4% of the lands
36 within a 50-mi (80-km) radius of the SEZ.
37

38
39 **11.3.22.2 Overview of Ongoing and Reasonably Foreseeable Future Actions**
40

41 The proposed Dry Lake SEZ decreased from 15,649 acres (63 km²) to 6,186 acres
42 (25 km², with an additional 460 acres (1.9 km²) within the SEZ identified as non-development
43 areas. The Draft Solar PEIS included six other proposed SEZs in Nevada. Two of these, Delamar
44 Valley and East Mormon Mountain, have been removed from consideration.
45

1 There are 12 pending ROW applications for solar facilities within 50 mi (80 km) of the
2 Dry Lake SEZ that could generate up to 4,145 MW of electricity on public lands in Nevada
3 (see the full list of pending applications in Table B-1 of Appendix B of this Final Solar PEIS).
4 However, these applications are in various stages of approval, and environmental assessments
5 have not been completed. As of the end of October 2011, these 12 pending solar applications
6 were not considered reasonably foreseeable future actions.
7

8 The ongoing and reasonably foreseeable future actions described below are grouped into
9 two categories: (1) actions that relate to energy production and distribution (Section 11.3.22.2.1);
10 and (2) other ongoing and reasonably foreseeable actions, including those related to electric
11 power generation, water management, natural gas and petroleum distribution, communication
12 systems, residential development, and mining (Section 11.3.22.2.2). Together, these actions and
13 trends have the potential to affect human and environmental receptors within the geographic
14 range of potential impacts over the next 20 years.
15

16 ***11.3.22.2.1 Energy Production and Distribution*** 17

18 The list of reasonably foreseeable future actions that relate to energy production and
19 distribution, including potential solar energy projects under the proposed action, near the
20 proposed Dry Lake SEZ has been updated and is presented in Table 11.3.22.2-1. Projects listed
21 in the table are shown in Figure 11.3.22.2-1. Most of these projects were described in the Draft
22 Solar PEIS; projects not described there are discussed below.
23
24

25 **Moapa Solar Project** 26

27 K Road Power proposes to construct and operate a 350-MW PV power plant on a
28 2,153-acre (8.7-km²) site located on the Moapa River Indian Reservation, approximately 5 mi
29 (8 km) east of the proposed Dry Lake SEZ. The project also includes the construction and
30 operation of an 8-mi (13-km) long, up to 500-kV transmission line to the Crystal Substation; a
31 1-mi (1.6-km) water pipeline; and a 3-mi (5-km) long, 12-kV transmission line linking the
32 Moapa Travel Plaza to the proposed project substation.
33
34

35 The proposed facility would have an estimated water requirement of 72 ac-ft/yr
36 (88,800 m³/yr) during construction and up to 20 to 40 ac-ft/yr (25,000 to 50,000 m³/yr) of water
37 during operation. Water will be drawn from an on-site well. Construction of the facility will
38 require approximately 400 workers at the peak of construction. Operation and maintenance of the
39 facility will require 35 full-time workers (BLM 2011d). A Desert Tortoise Relocation Plan will
40 be instituted to remove the tortoises prior to construction and move them to suitable habitat on
41 the reservation.
42
43

1 **TABLE 11.3.22.2-1 Ongoing and Reasonably Foreseeable Future Actions Related to Energy**
 2 **Development and Distribution near the Proposed Dry Lake SEZ as Revised^a**

Description	Status	Resources Affected	Primary Impact Location
Renewable Energy Projects on BLM-Administered lands			
Mohave County Wind Farm (AZA 32315), 500 MW, 31,338 acres ^b	NOI No. 2, July 26, 2010 Plan of Development August 10, 2010^c	Terrestrial habitats, wildlife cultural resources, land use	40 mi ^d southeast of the SEZ in Arizona
Renewable Energy Projects on Private Lands			
Copper Mountain Solar 2 (Boulder City Solar), 150-MW PV, 1,100 acres	Construction to begin in early 2012^e	Terrestrial habitats, wildlife, cultural resources, land use	40 mi south of the SEZ
Copper Mountain Solar 1 (El Dorado Solar Expansion), 48-MW PV, 380 acres	Operating^f	Terrestrial habitats, wildlife, cultural resources, land use	45 mi south of the SEZ
Moapa Solar Project (NVN-89176), 350-MW PV, 2,153 acres, transmission line requires BLM ROW authorization	DEIS November 2011^g	Terrestrial habitats, wildlife, cultural resources, land use	5 mi east of the SEZ
BrightSource Coyote Springs Project, 400-MW solar tower, 7,680 acres	Planning stage	Terrestrial habitats, vegetation, wildlife, soil, water, visual, cultural	15 mi north of the SEZ
BrightSource Overton Project, 400-MW solar tower	Planning stage	Terrestrial habitats, vegetation, wildlife, soil, water, visual, cultural	30 mi northeast of the SEZ
Transmission and Distribution Systems			
One Nevada Transmission Line Project	ROD March 1, 2011^h	Disturbed areas, terrestrial habitats along transmission line ROW	Corridor passes through the SEZ
Southwest Intertie Project	FONSI July 30, 2008; FEIS January 2010 ⁱ Under construction; expected first operation 2012	Disturbed areas, terrestrial habitats along transmission line ROW	Corridor passes through the SEZ

3

TABLE 11.3.22.2-1 (Cont.)

Description	Status	Resources Affected	Primary Impact Location
<i>Transmission and Distribution Systems (Cont.)</i>			
TransWest Transmission Project	NOI January 4, 2011^j	Disturbed areas, terrestrial habitats along transmission line ROW	Corridor passes through the SEZ
Zephyr and Chinook Transmission Line Project	Permit Applications January 28, 2011^k	Disturbed areas, terrestrial habitats along transmission line ROW	Corridor passes near or through the SEZ

^a Includes projects in later stages of agency environmental review and project development. For projects on BLM-administered lands, includes those approved in 2010 and priority projects for 2011 and 2012 (see BLM 2012b). Projects with status changed from that given in the Draft Solar PEIS are shown in bold text.

^b To convert acres to km², multiply by 0.004047.

^c See BP Wind Energy North America Inc. (2011) for details.

^d To convert mi to km, multiply by 1.609.

^e See Sempra U.S. Gas & Power (2012a) for details.

^f See Sempra U.S. Gas & Power (2012b) for details.

^g See BLM (2011d) for details.

^h See BLM (2011e) for details.

ⁱ See Western (2010) for details.

^j See BLM (2011f) for details.

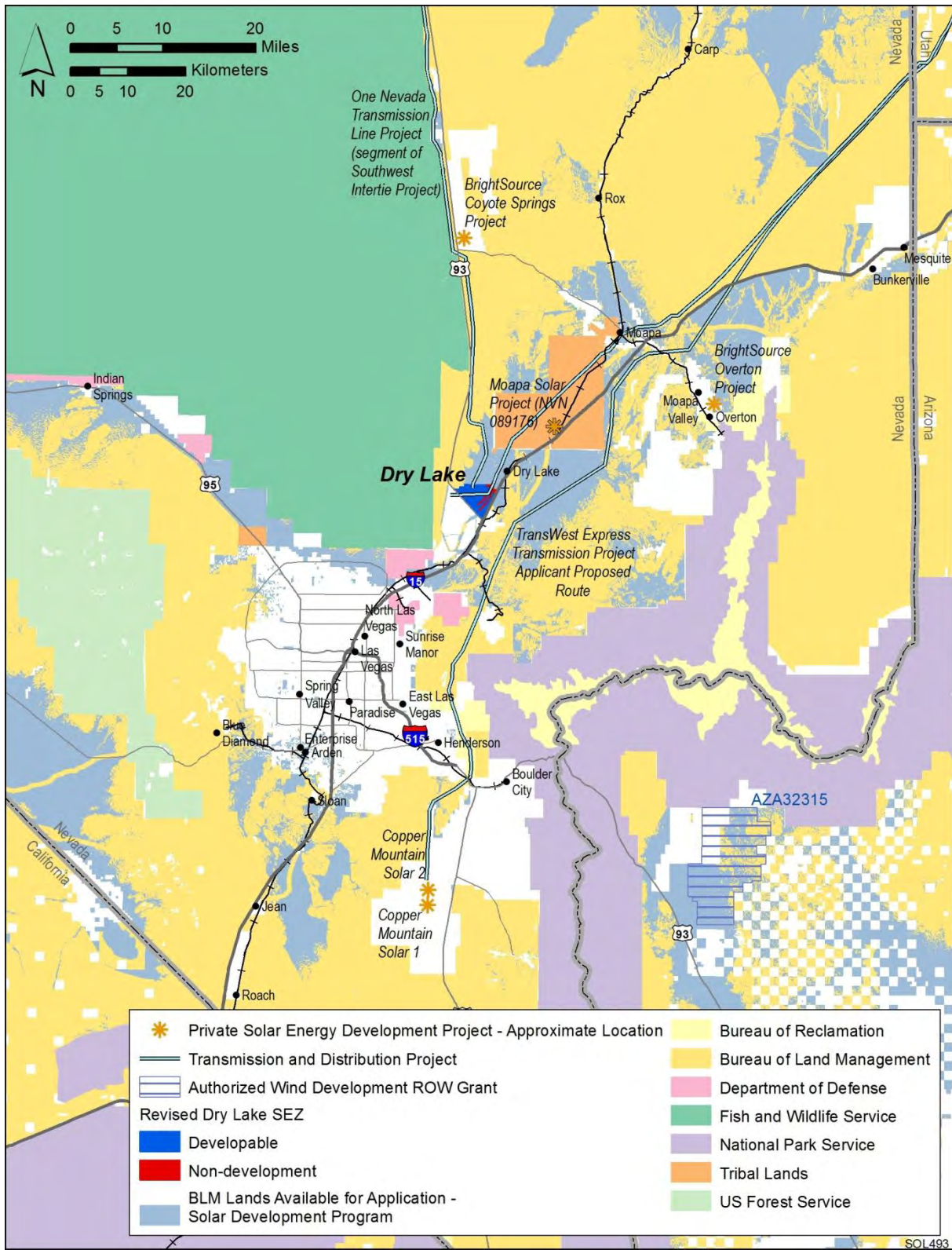
^k See TransCanada (2011) for details.

1
2
3 **11.3.22.2.2 Other Actions**
4

5 A number of energy production facilities are located within a 50-mi (80-km) radius from
6 the center of the Dry Lake SEZ, which includes portions of Clark and Lincoln Counties in
7 Nevada, Washington County in Utah, and Mohave County in Arizona. Other major ongoing
8 and foreseeable actions within 50 mi (80 km) of the proposed Dry Lake SEZ have been updated
9 and are listed in Table 11.3.22.2-2. These projects were described in the Draft Solar PEIS.

10
11
12 **11.3.22.3 General Trends**
13

14 The information on general trends presented in the Draft Solar PEIS remains valid.
15



1
 2 **FIGURE 11.3.22.2-1 Locations of Existing and Reasonably Foreseeable Renewable Energy**
 3 **Projects on Public Land within a 50-mi (80-km) Radius of the Proposed Dry Lake SEZ as**
 4 **Revised**

1 TABLE 11.3.22.2-2 Other Ongoing and Foreseeable Actions near the Proposed Dry Lake SEZ as Revised^a

Description	Status	Resources Affected	Primary Impact Location ^b
Renewable Energy Projects			
El Dorado Solar	Operating since 2009	Terrestrial habitats, wildlife, visual	45 mi south of the SEZ
Nellis Air Force Base Solar	Operating since 2007	Terrestrial habitats, wildlife, visual	10 mi south of the SEZ
Nevada Solar One	Operating since 2007	Terrestrial habitats, wildlife, water, cultural, visual	40 mi south of the SEZ
Sithe Global Flat Top Mesa Solar	Proposed	Terrestrial habitats, wildlife, cultural, visual	42 mi northeast of the SEZ
Other Energy Projects			
Apex Generating Station	Operating since 2003	Terrestrial habitats, wildlife, water, air, cultural, visual	Adjacent to the SEZ
Chuck Lenzie Generating Station	Operating since 2006	Terrestrial habitats, wildlife, water, air, cultural, visual	Adjacent to the SEZ
Edward W. Clark Generating Station	Operating since 1973	Terrestrial habitats, wildlife, water, air, cultural, visual	25 mi southwest of the SEZ
El Dorado Energy Generating Station	Operating since 2000	Terrestrial habitats, wildlife, water, air, cultural, visual	45 mi south of the SEZ
Goodsprings Waste Heat Recovery Facility	EA and FONSI September 2009	Threatened and endangered species, air, visual	50 mi southwest of the SEZ
Harry Allen Generating Station	Operating since early 1980s	Terrestrial habitats, wildlife, water, air, cultural, visual	Within the SEZ
Harry Allen Expansion	Under construction	Terrestrial habitats, wildlife, water, air, cultural, visual	Within the SEZ

TABLE 11.3.22.2-2 (Cont.)

Description	Status	Resources Affected	Primary Impact Location
Other Energy Projects (Cont.)			
Reid Gardner Generating Station	Operating since 1965	Terrestrial habitats, wildlife, water, air, cultural, visual	20 mi northeast of the SEZ
Reid Gardner Expansion	EA and FONSI March 2008	Terrestrial habitats, wildlife, soil, air, water	20 mi northeast of the SEZ
Saguaro Power Company	Operating since 2000	Terrestrial habitats, wildlife, water, air, cultural, visual	20 mi south of the SEZ
Silverhawk Generating Station	Operating since 2004	Terrestrial habitats, wildlife, water, air, cultural, visual	Adjacent to the SEZ
Sunrise Generating Station	Operating since 1964	Terrestrial habitats, wildlife, water, air, cultural, visual	20 mi south of the SEZ
Toquop Energy Project	Coal-fired plant FEIS 2009, changed to natural gas in 2010	Terrestrial habitats, wildlife, soil, water, air, cultural, visual	50 mi northeast of the SEZ
Distribution Systems			
Kern River Gas Transmission System	Operating since 1992	Disturbed areas, terrestrial habitats along pipeline ROW	Corridor passes through the SEZ
UNEV Pipeline Project	FEIS April 2010, under construction	Disturbed areas, terrestrial habitats along pipeline ROW	Corridor passes through the SEZ
Other Projects			
Arizona Nevada Tower Corporation Communication Sites	EA issued April 2007	Terrestrial habitats, wildlife, cultural resources	West and north of the SEZ

TABLE 11.3.22.2-2 (Cont.)

Description	Status	Resources Affected	Primary Impact Location
Other Projects (Cont.)			
Clark, Lincoln, and White Pine Counties Groundwater Development Project	DEIS June 2011	Terrestrial habitats, wildlife, groundwater	Within the SEZ
Coyote Springs Investment Planned Development Project	FEIS Sept. 2008, ROD October 2008	Terrestrial habitats, wildlife, water, socioeconomics	15 mi north of the SEZ
Dry Lake Groundwater Testing/ Monitoring Wells	EA and FONSI September 2009	Terrestrial habitats, wildlife cultural resources	Within the SEZ
Lincoln County Land Act Groundwater Development and Utility ROW	FEIS May 2009, ROD January 2010	Terrestrial habitats, wildlife, groundwater	45 mi northeast of the SEZ
Meadow Valley Gypsum Project	EA and FONSI 2008	Terrestrial habitats, wildlife, soils, socioeconomics	35 mi northeast of the SEZ
Mesquite Nevada General Aviation Replacement Airport	DEIS April 2008, project cancelled^c	Land use, terrestrial habitats, wildlife, soil, water, air, cultural, visual	40 mi northeast of the SEZ
NV Energy Microwave and Mobile Radio Project	Draft FONSI July 2010	Terrestrial habitats, wildlife, cultural resources	Two sites within the SEZ, one site 45 mi north of the SEZ

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

^b To convert mi to km, multiply by 1.609.

^c See FAA (2011) for details.

1 **11.3.22.4 Cumulative Impacts on Resources**
2

3 Total disturbance over 20 years in the proposed Dry Lake SEZ would be about
4 4,574 acres (18.5 km²) (80% of the developable area of the proposed SEZ). This development
5 would contribute incrementally to the impacts from other past, present, and reasonably
6 foreseeable future actions in the region as described in the Draft Solar PEIS. Primary impacts
7 from development in the Dry Lake SEZ may include impacts on water quantity and quality, air
8 quality, ecological resources such as habitat and species, cultural and visual resources, and
9 specially designated lands.

10
11 Activities in the region that will contribute to cumulative impacts include one additional
12 solar PV project that was not addressed in the Draft Solar PEIS: the proposed Moapa Solar
13 Project (350 MW) located 5 mi (8 km) east of the SEZ on a 2,153-acre (8.7-km²) site on the
14 Moapa River Indian Reservation. The proposed facility would have an estimated water
15 requirement of 72 ac-ft/yr (88,800 m³/yr) during construction and up to 20 to 40 ac-ft/yr (25,000
16 to 50,000 m³/yr) of water during operations. Water will be drawn from an on-site well. A Desert
17 Tortoise Relocation Plan will be instituted to remove the tortoises prior to construction and move
18 them to suitable habitat on the reservation. The Mesquite Replacement Airport, which would
19 have required the BLM to release 2,560 acres (10.4 km²) to the City of Mesquite, has been
20 cancelled. The Coyote Springs Development has not yet begun, and if it does not become a
21 reality, then the estimated 70,000 ac-ft/yr (86 million m³/yr) would not be needed and the
22 21,454 acres (86.8 km²) would potentially remain undeveloped. In addition, this is desert tortoise
23 habitat, and relocations would not be required if the development does not occur.

24
25 Overall, the incremental cumulative impacts associated with the development in the
26 proposed Dry Lake SEZ during construction, operation, and decommissioning are expected to be
27 less than those provided in the Draft Solar PEIS. This is because the proposed Dry Lake SEZ
28 decreased from 15,649 acres (63 km²) to 6,186 acres (25 km²), an additional 460 acres (1.9 km²)
29 within the SEZ were identified as non-development areas, and the Mesquite Replacement
30 Airport project was cancelled.

31
32
33 **11.3.23 Transmission Analysis**
34

35 The methodology for this transmission analysis is described in Appendix G of this Final
36 Solar PEIS. This section presents the results of the transmission analysis for the Dry Lake SEZ,
37 including the identification of potential load areas to be served by power generated at the SEZ
38 and the results of the DLT analysis. Unlike Sections 11.3.2 through 11.3.22, this section is not
39 an update of previous analysis for the Dry Lake SEZ; this analysis was not presented in the
40 Draft Solar PEIS. However, the methodology and a test case analysis were presented in the
41 Supplement to the Draft. Comments received on the material presented in the Supplement were
42 used to improve the methodology for the assessment presented in this Final Solar PEIS.

43
44 On the basis of its size, the assumption of a minimum of 5 acres (0.02 km²) of land
45 required per MW, and the assumption of a maximum of 80% of the land area developed, the

1 Dry Lake SEZ is estimated to have the potential to generate 915 MW of marketable solar power
2 at full build-out.
3
4

5 11.3.23.1 Identification and Characterization of Load Areas 6

7 The primary candidates for Dry Lake SEZ load areas are the major surrounding cities.
8 Figure 11.3.23.1-1 shows the possible load areas for the Dry Lake SEZ and the estimated portion
9 of their market that could be served by solar generation. Possible load areas for the Dry Lake
10 SEZ include Phoenix, Arizona; Salt Lake City, Utah; Las Vegas and Reno, Nevada; and
11 Los Angeles, San Jose, San Francisco, Oakland, and Sacramento, California.
12

13 The two load area groups examined for the Dry Lake SEZ are as follows:
14

- 15 1. Las Vegas, Nevada; and
 - 16 2. Los Angeles, California; and Phoenix, Arizona.
- 17
18

19 Figure 11.3.23.1-2 shows the most economically viable transmission scheme for the Dry
20 Lake SEZ (transmission scheme 1), and Figure 11.3.23.1-3 shows an alternative transmission
21
22

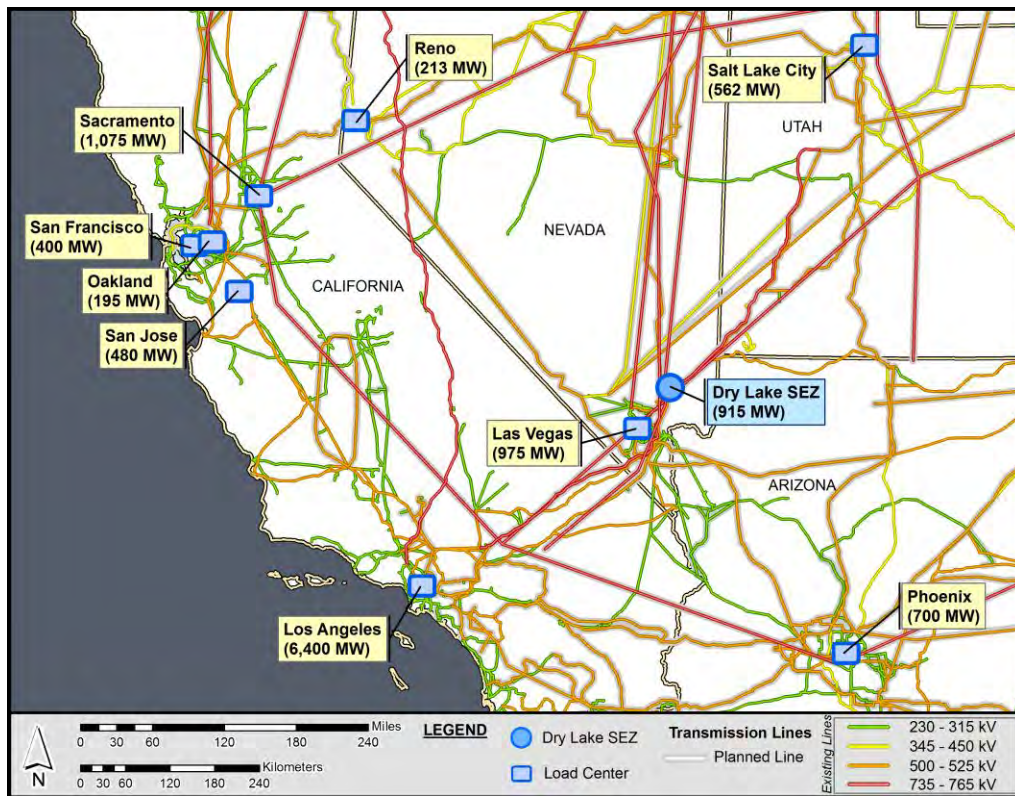


FIGURE 11.3.23.1-1 Location of the Proposed Dry Lake SEZ and Possible Load Areas (Source for background map: Platts 2011)



FIGURE 11.3.23.1-2 Transmission Scheme 1 for the Proposed Dry Lake SEZ (Source for background map: Platts 2011)

scheme (transmission scheme 2) that represents a logical choice should transmission scheme 1 be infeasible. As described in Appendix G, the alternative shown in transmission scheme 2 represents the optimum choice if one or more of the primary linkages in transmission scheme 1 are excluded from consideration. The groups provide for linking loads along alternative routes so that the SEZ's output of 915 MW could be fully allocated.

Table 11.3.23.1-1 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.

11.3.23.2 Findings for the DLT Analysis

The DLT analysis approach assumes that the Dry Lake SEZ will require all new construction for transmission lines (i.e., dedicated lines) and substations. The new transmission lines(s) would directly convey the 915-MW output of the Dry Lake 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.



1

2 **FIGURE 11.3.23.1-3 Transmission Scheme 2 for the Proposed Dry Lake SEZ**
 3 **(Source for background map: Platts 2011)**

2

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6 **TABLE 11.3.23.1-1 Candidate Load Area Characteristics for the Proposed Dry**
 7 **Lake 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	Las Vegas, Nevada ^a	Southwest	1,950,000	4,875	975
2	Los Angeles, California ^a	Southwest	12,800,000	32,072	6,400
	Phoenix, Arizona ^b	Southeast	1,400,000	3,500	700

^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).

8

9

1 Figures 11.3.23.1-2 and 11.3.23.1-3 display the pathways that new dedicated lines might
2 follow to distribute solar power generated at Dry Lake SEZ via the two identified transmission
3 schemes described in Table 11.3.23.1-1. These pathways parallel existing 500-, 345-, 230-kV,
4 and/or lower voltage lines. The intent of following existing lines is to avoid pathways that may
5 be infeasible due to topographical limitations or other concerns.
6

7 For transmission scheme 1, a new line would be constructed to connect with Las Vegas
8 (975 MW), so that the 915-MW output of the Dry Lake SEZ could be fully utilized
9 (Figure 11.3.23.1-2). This particular scheme has two segments. The first segment extends to the
10 northwest from the SEZ to the first switching station over a distance of about 0.5 mi (0.8 km).
11 This segment would require a single-circuit 345-kV (1–345 kV) bundle of two conductors (Bof2)
12 transmission line design based on engineering and operational considerations. The second and
13 final leg runs about 30 mi (48 km) from the first switching station to Las Vegas. In general, the
14 transmission configuration options were determined by using the line “loadability” curve
15 provided in American Electric Power’s *Transmission Facts* (AEP 2010). Appendix G documents
16 the line options used for this analysis and describes how the load area groupings were
17 determined.
18

19 Transmission scheme 2, which for the purpose of analysis assumes the Las Vegas market
20 is not available, serves load centers to the south and southwest. Figure 11.3.23.1-3 shows that
21 new lines would be constructed to connect with Los Angeles (6,400 MW) and Phoenix
22 (700 MW), so that the 915-MW output of the Dry Lake SEZ could be fully utilized. This scheme
23 has four segments. The first segment extends northwesterly from the SEZ to the first switching
24 station over a distance of about 0.5 mi (0.8 km). This segment would require a single-circuit
25 500-kV (1-500 kV) bundle of three conductors (Bof3) transmission line design. The second leg
26 runs about 30 mi (48 km) from the first switching station to the Las Vegas switching station,
27 while the third leg extends from the Las Vegas switching station about 280 mi (451 km) to
28 Los Angeles (6,400 MW). The fourth and final segment runs from the Las Vegas Switching
29 Station to Phoenix (700 MW) for a distance of 294 mi (473 km).
30

31 Table 11.3.23.2-1 summarizes the distances to the various load areas over which new
32 transmission lines would need to be constructed, as well as the assumed number of substations
33 that would be required. One substation is assumed to be installed at each load area and an
34 additional one at the SEZ. In general, the total number of substations per scheme is simply equal
35 to the number of load areas associated with the scheme plus one. Substations at the load areas
36 would consist of one or more step-down transformers, while the originating substation at the
37 SEZ would consist of several step-up transformers. The originating substation would have a
38 rating of at least 915 MW (to match the plant’s output), while the combined load substations
39 would have a similar total rating of 915 MW. For schemes that require the branching of the
40 lines, a switching substation is assumed to be constructed at the appropriate junction. In general,
41 switching stations carry no local load but are assumed to be equipped with switching gears
42 (e.g., circuit breakers and connecting switches) to reroute power as well as, in some cases, with
43 additional equipment is installed to regulate voltage.
44

45 Table 11.3.23.2-2 provides an estimate of the total land area disturbed for construction
46 of new transmission facilities under each of the schemes evaluated. The most favorable

1 **TABLE 11.3.23.2-1 Potential Transmission Schemes, Estimated Solar Markets, and Distances to**
 2 **Load Areas for the Proposed Dry Lake 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	Las Vegas, Nevada ^a	975	975	30.5	31	345	3
2	Los Angeles, California ^a Phoenix, Arizona ^b	6,400 700	7,100	280 324.5	605	500, 138	5

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

b The load area represents the city named.

c From Table 11.3.23.1-1.

d To convert mi to km, multiply by 1.6093.

3
4
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6

TABLE 11.3.23.2-2 Comparison of the Various Transmission Line Configurations with Respect to Land Use Requirements for the Proposed Dry Lake SEZ

Transmission Scheme	City/Load Area Name	Total Distance (mi) ^c	No. of Substations	Land Use (acres) ^d		
				Transmission Line	Substation	Total
1	Las Vegas, Nevada ^a	30.5	3	647.0	22.0	669.0
2	Los Angeles, California ^a Phoenix, Arizona ^b	311 294	5	2,850.9	22.0	2,872.9

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

b The load area represents the city named.

c To convert mi to km, multiply by 1.6093.

d To convert acres to km², multiply by 0.004047.

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transmission scheme with respect to minimizing costs and the area disturbed would be scheme 1, which would serve Las Vegas. This scheme is estimated to potentially disturb about 669 acres (2.7 km²) of land. The less favorable transmission scheme with respect to minimizing costs and the area disturbed would be scheme 2 (serving Los Angeles and Phoenix, but excluding Las Vegas). For this scheme, the construction of new transmission lines and substations is estimated to disturb a land area on the order of 2,873 acres (11.6 km²).

Table 11.3.23.2-3 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

1 **TABLE 11.3.23.2-3 Comparison of Potential Transmission Lines with Respect to NPV**
 2 **(Base Case) for the Proposed Dry Lake 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	Las Vegas, Nevada ^a	67.1	60.4	160.3	1,237.9	1,110.4
2	Los Angeles, California ^a Phoenix, Arizona ^b	1,311.3	60.4	160.3	1,237.9	-133.0

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

^b The load area represents the city named.

3
4
5 the 10-year horizon. A positive NPV indicates that revenues more than offset investments. This
6 calculation does not include the cost of producing electricity.

7
8 The most economically attractive configuration (transmission scheme 1) has the highest
9 positive NPV and has Las Vegas. The secondary case (transmission scheme 2), which excludes
10 the Las Vegas market, is less economically attractive. For the assumed utilization factor of 20%,
11 scheme 2 exhibits a negative NPV, implying that this option may not be economically viable
12 under the current assumptions.

13
14 Table 11.3.23.2-4 shows the effect of varying the value of the utilization factor on the
15 NPV of the transmission schemes. The table shows that at about 30% utilization, NPVs for both
16 schemes are positive. It also shows that as the utilization factor is increased, the economic
17

18
19 **TABLE 11.3.23.2-4 Effect of Varying the Utilization Factor on the NPV of the Transmission**
20 **Schemes for the Proposed Dry Lake SEZ**

Transmission Scheme	City/Load Area Name	NPV (\$ million) at Different Utilization Factors					
		20%	30%	40%	50%	60%	70%
1	Las Vegas, Nevada ^a	1,110	1,729	2,348	2,967	3,586	4,205
2	Los Angeles, California ^a Phoenix, Arizona ^b	-134	485	1,104	1,723	2,342	2,961

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

^b The load area represents the city named.

21

1 viability of the lines increases. Utilization factors can be raised by allowing the new dedicated
2 lines to market other power generation outputs in the region in addition to that of its associated
3 SEZ.

4
5 The findings of the DLT analysis for the proposed Dry Lake SEZ are as follows:

- 6
7 • Transmission scheme 1, which identifies Las Vegas as the primary market,
8 represents the most favorable option based on NPV and land use
9 requirements. This configuration would result in new land disturbance of
10 about 669 acres (2.7 km²).
- 11
12 • Transmission scheme 2, which represents an alternative configuration if
13 Las Vegas is excluded, serves Los Angeles and Phoenix. This configuration
14 would result in new land disturbance of about 2,873 acres (11.6 km²).
- 15
16 • Other load area configurations are possible but would be less favorable than
17 scheme 1 in terms of NPV and, in most cases, also in terms of land use
18 requirements. If new electricity generation at the proposed Dry Lake SEZ is
19 not sent to either of the two markets identified above, the potential upper-
20 bound impacts in terms of cost would be greater.
- 21
22 • The analysis of transmission requirements for the proposed Dry Lake SEZ
23 indicates no reduction of impacts from increasing the solar-eligible load
24 assumption for transmission scheme 1, which brings power to Las Vegas.
25 Increasing the solar-eligible percentage would have no effect, because an
26 adequate load area was identified under the 20% assumption that would
27 accommodate all of the SEZ's capacity. Thus, line distances and voltages
28 would not be affected by increasing the solar-eligible load assumption, and
29 similarly the associated costs and land disturbance would not be affected.
30 However, for transmission scheme 2, which serves Los Angeles and Phoenix,
31 increasing the solar-eligible load assumption could result in lower cost and
32 land disturbance estimates, because it is possible that fewer load areas would
33 be needed to accommodate the SEZ's capacity.

34 35 36 **11.3.24 Impacts of the Withdrawal**

37
38 The BLM is proposing to withdraw 6,186 acres (25 km²) of public land comprising the
39 proposed Dry Lake SEZ from settlement, sale, location, or entry under the general land laws,
40 including the mining laws, for a period of 20 years (see Section 2.2.2.2.4 of the Final Solar
41 PEIS). The public lands would be withdrawn, subject to valid existing rights, from settlement,
42 sale, location, or entry under the general land laws, including the mining laws. This means that
43 the lands could not be appropriated, sold, or exchanged during the term of the withdrawal and
44 new mining claims could not be filed on the withdrawn lands. Mining claims filed prior to the
45 segregation or withdrawal of the identified lands would take precedence over future solar energy
46 development. The withdrawn lands would remain open to the mineral leasing, geothermal

1 leasing, and mineral material laws, and the BLM could elect to lease the oil, gas, coal, or
2 geothermal steam resources or to sell common-variety mineral materials, such as sand and
3 gravel, contained in the withdrawn lands. In addition, the BLM would retain the discretion to
4 authorize linear and renewable energy ROWs on the withdrawn lands.
5

6 The purpose of the proposed land withdrawal is to minimize the potential for conflicts
7 between mineral development and solar energy development for the proposed 20-year
8 withdrawal period. Under the land withdrawal, only mining claims recorded before the current
9 segregation could be developed, if valid. Because the Dry Lake SEZ has 23 active claims, it is
10 possible that some mining-related surface development could occur at the site during the
11 withdrawal period and preclude use of at least a portion of the SEZ for solar energy
12 development. Mining-related surface development includes activities such as the establishment
13 of open pit mining, construction of roads for hauling materials, extraction of ores from tunnels or
14 adits, or construction of facilities to process the material mined.
15

16 For the Dry Lake SEZ, impacts of the proposed withdrawal on mineral resources and
17 related economic activity and employment are expected to be negligible to minor. Although the
18 area contains a number of active lode and placer claims (and several closed lode and placer
19 claims), there has been no known production from the lands within the SEZ (BLM 2012a). Since
20 the claims were filed prior to the temporary segregation, they would take precedence over future
21 solar energy development if found to be valid. The lands within the SEZ would remain open to
22 mineral leasing, geothermal leasing, and mineral materials laws. Therefore, the BLM could still
23 elect to lease oil, gas, coal, or geothermal resources or to sell common-variety mineral materials,
24 such as sand and gravel, at its discretion. The lands would also remain open to ROW
25 authorizations.
26

27 Although the mineral potential of the lands within the Dry Lake SEZ is low, the proposed
28 withdrawal of lands within the SEZ would preclude many types of mining activity over a 20-year
29 period, resulting in the avoidance of potential mining-related adverse impacts. Impacts
30 commonly related to mining development include increased soil erosion and sedimentation,
31 water use, generation of contaminated water in need of treatment, creation of lagoons and ponds
32 (hazardous to wildlife), toxic runoff, air pollution, establishment of noxious weeds and invasive
33 species, habitat destruction or fragmentation, disturbance of wildlife, blockage of migration
34 corridors, increased visual contrast, noise, destruction of cultural artifacts and fossils and/or their
35 context, disruption of landscapes and sacred places of interest to tribes, increased traffic and
36 related emissions, and conflicts with other land uses (e.g., recreational).
37
38
39

1 **11.3.25 References**

2
3 *Note to Reader:* This list of references identifies Web pages and associated URLs where
4 reference data were obtained for the analyses presented in this Final Solar PEIS. It is likely that
5 at the time of publication of this Final Solar PEIS, some of these Web pages may no longer be
6 available or their URL addresses may have changed. The original information has been retained
7 and is available through the Public Information Docket for this Final Solar PEIS.

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1 **11.3.26 Errata for the Proposed Dry Lake SEZ**
2

3 This section presents corrections to material presented in the Draft Solar PEIS and the
4 Supplement to the Draft. The need for these corrections was identified in several ways: through
5 comments received on the Draft Solar PEIS and the Supplement to the Draft (and verified by the
6 authors), through new information obtained by the authors subsequent to publication of the Draft
7 Solar PEIS and the Supplement to the Draft, or through additional review of the original material
8 by the authors. Table 11.3.26-1 provides corrections to information presented in the Draft Solar
9 PEIS and the Supplement to the Draft.
10
11

1 **TABLE 11.3.26-1 Errata for the Proposed Dry Lake SEZ (Section 11.3 of the Draft Solar PEIS and Section C.4.2 of the Supplement to**
 2 **the Draft Solar PEIS)**

Section No.	Page No.	Line No.	Figure No.	Table No.	Correction
11.3.7.1.2	11.3-45		11.3.7.1-5		The soil map presented in the Draft Solar PEIS for the Dry Lake SEZ erroneously showed the Dry Lake Valley North SEZ; the correct soil map can be found in Section 11.3.7.1.2 of this Final Solar PEIS as Figure 11.3.7.1-1.
11.3.9.1.3	11.3-57	13–15			“The Southern Nevada Water Authority (SNWA 2009) stated that the Las Vegas Valley Water District has leased the majority of their 2,200 ac-ft/yr (2.7 million m ³ /yr) of groundwater rights in Garnet Valley to dry-cooled power plants in the area,” should read, “The Southern Nevada Water Authority (SNWA 2009) stated that the Las Vegas Valley Water District has leased the majority of their combined 2,200 ac-ft/yr (2.7 million m ³ /yr) of groundwater rights in Garnet Valley and Hidden Valley to dry-cooled power plants in the area.”
11.3.11.2					All uses of the term “neotropical migrants” in the text and tables of this section should be replaced with the term “passerines.”
11.3.22.2.2	11.3-344	27			“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.

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1 **11.4 DRY LAKE VALLEY NORTH**

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4 **11.4.1 Background and Summary of Impacts**

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6
7 **11.4.1.1 General Information**

8
9 The proposed Dry Lake Valley North SEZ is located in Lincoln County in southeastern
10 Nevada. The population centers closest to the SEZ are Pioche, located about 15 mi (24 km) to
11 the east, and Caliente, located about 15 mi (24 km) to the southeast; both communities have
12 populations of about 1,000. The smaller communities of Caselton and Prince are located about
13 13 mi (21 km) to the east of the SEZ. The major roads nearest to the Dry Lake Valley North SEZ
14 are State Route 318, which is about 7 mi (11 km) to the west of the SEZ, and U.S. 93, about 8 mi
15 (13 km) to the south. Access to the interior of the SEZ is by dirt roads. The nearest railroad
16 access is approximately 25 mi (40 km) from the SEZ. As of October 28, 2011, there were no
17 pending solar applications within or adjacent to the SEZ.
18

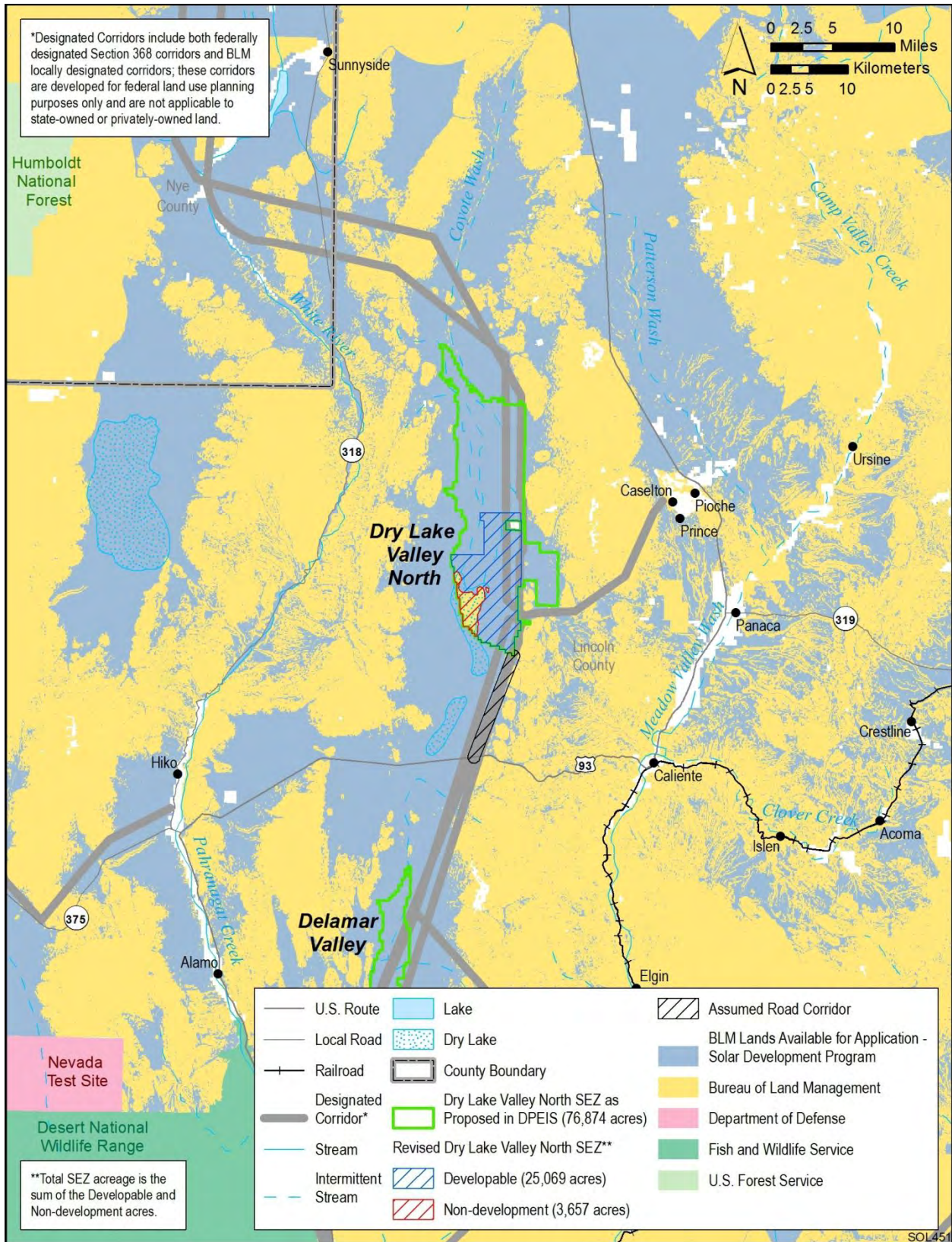
19 As published in the Draft Solar PEIS (BLM and DOE 2010), the proposed Dry Lake
20 Valley North SEZ had a total area of 76,874 acres (311 km²). In the Supplement to the Draft
21 (BLM and DOE 2011), the size of the SEZ was reduced (see Figure 11.4.1.1-1), eliminating
22 48,148 acres (195 km²), mainly the northern portion of the SEZ. Removing the northern portion
23 of the SEZ will avoid or minimize some potential impacts from development in the SEZ,
24 including impacts on sage-grouse and other wildlife, impacts on grazing, and impacts on military
25 operations. In addition, about 3,657 acres (15 km²) of wetland and dry lake within the remaining
26 SEZ boundaries were identified as non-development areas (Figure 11.4.1.1-2). The remaining
27 developable area within the SEZ is 25,069 acres (101.5 km²).
28

29 The lands eliminated from the proposed Dry Lake Valley North SEZ will be retained as
30 solar ROW variance areas, because the BLM expects that individual projects could be sited in
31 these areas to avoid and/or minimize impacts. Any solar development within these areas in the
32 future would require appropriate environmental analysis.
33

34 The analyses in the following sections update the affected environment and potential
35 environmental, cultural, and socioeconomic impacts associated with utility-scale solar energy
36 development in the proposed Dry Lake Valley North SEZ as described in the Draft Solar PEIS.
37

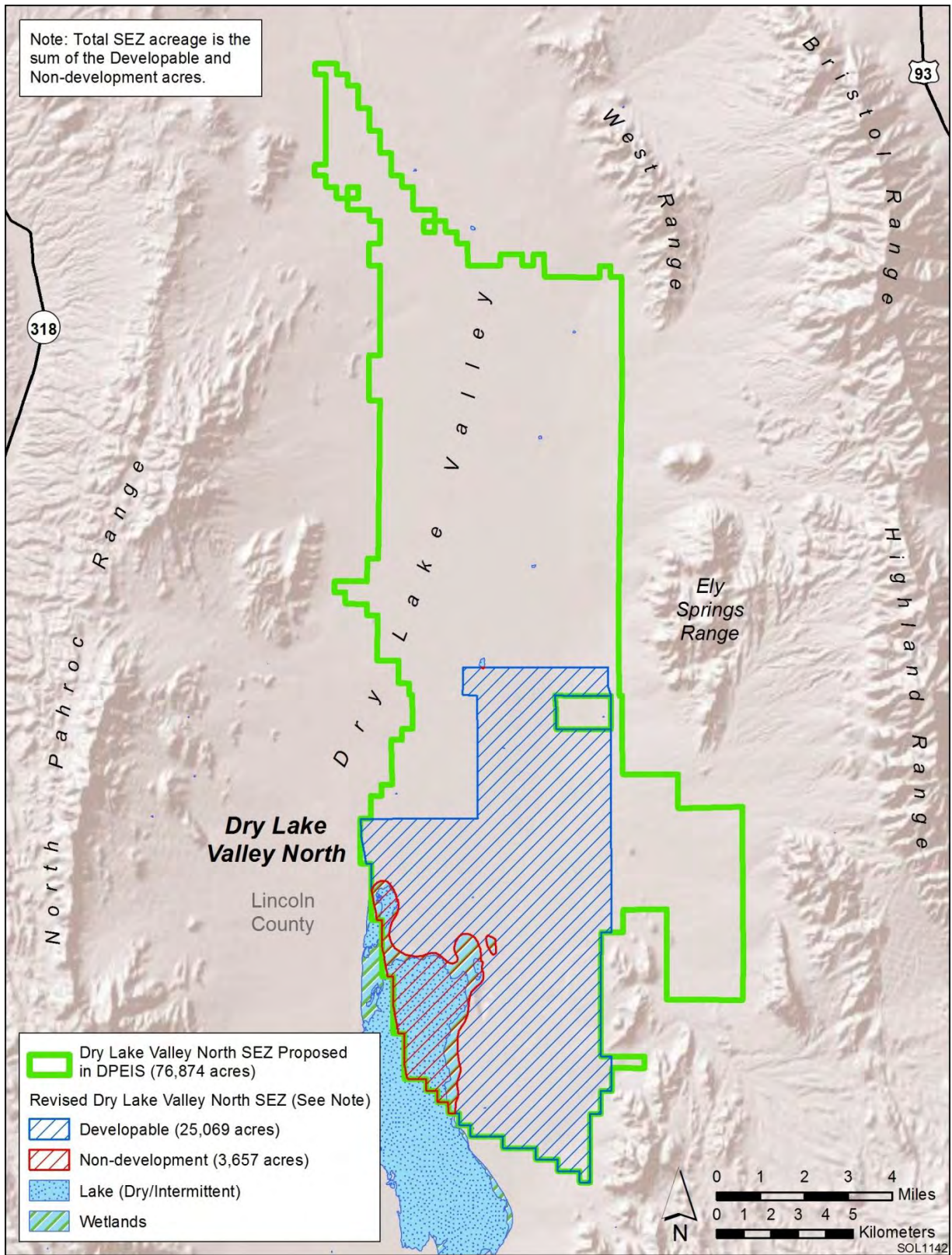
38
39 **11.4.1.2 Development Assumptions for the Impact Analysis**

40
41 Maximum solar development of the proposed Dry Lake Valley North SEZ was assumed
42 to be 80% of the developable SEZ area over a period of 20 years, a maximum of 20,055 acres
43 (81 km²). Full development of the Dry Lake Valley North SEZ would allow development of
44 facilities with an estimated total of between 2,228 MW (power tower, dish engine, or PV
45 technologies, 9 acres/MW [0.04 km²/MW]) and 4,011 MW (solar trough technologies,
46 5 acres/MW [0.02 km²/MW]) of electrical power capacity.



1

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



1

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

1 Availability of transmission from SEZs to load centers will be an important consideration
2 for future development in SEZs. For the proposed Dry Lake Valley North SEZ, the nearest
3 existing transmission line as identified in the Draft Solar PEIS is a 69-kV transmission line that
4 runs through the SEZ. It is possible that this existing line could be used to provide access from
5 the SEZ to the transmission grid, but the 69-kV capacity of the existing line would not be
6 adequate for 2,228 to 4,011 MW of new capacity. Therefore, at full build-out capacity, new
7 transmission lines and possibly upgrades of existing transmission lines would be required to
8 bring electricity from the proposed Dry Lake Valley North SEZ to load centers. An assessment
9 of the most likely load center destinations for power generated at the Dry Lake Valley North
10 SEZ and a general assessment of the impacts of constructing and operating new transmission
11 facilities to those load centers are provided in Section 11.4.23. In addition, the generic impacts of
12 transmission and associated infrastructure construction and of line upgrades for various resources
13 are discussed in Chapter 5 of this Final Solar PEIS. Project-specific analyses would also be
14 required to identify the specific impacts of new transmission construction and line upgrades for
15 any projects proposed within the SEZ.

16
17 The Dry Lake Valley North SEZ partially overlaps a Section 368 federally designated
18 energy corridor. In addition, it overlaps a locally designated transmission corridor. For this
19 impact assessment, it was assumed that up to 80% of the proposed SEZ could be developed. This
20 assumption does not take into account the potential limitations to solar development that may
21 result from siting constraints associated with these corridors. The development of solar facilities
22 and existing corridors will be dealt with by the BLM on a case-by-case basis; see Section 11.4.2.2
23 on impacts on lands and realty for further discussion.

24
25 The Draft Solar PEIS had indicated that the nearest major access road was NV 318,
26 located 7 mi (11 km) to the west of the SEZ, and that an access road to the SEZ would be built
27 from NV 318. For this updated assessment, it was assumed that an access road would be built to
28 U.S. 93, 8 mi (13 km) to the south of the SEZ, because the new access road to the south could
29 utilize the corridor of an existing county road and would not pass over areas with steep terrain. It
30 was assumed that construction of the access road would result in 58 acres (0.2 km²) of land
31 disturbance, as summarized in Table 11.4.1.2-1. While there are dirt/ranch roads within the SEZ,
32 additional internal road construction would also likely be required to support solar facility
33 construction.

34 35 36 **11.4.1.3 Programmatic and SEZ-Specific Design Features**

37
38 The proposed programmatic design features for each resource area to be required under
39 BLM's Solar Energy Program are presented in Section A.2.2 of Appendix A of this Final Solar
40 PEIS. These programmatic design features are intended to avoid, minimize, and/or mitigate
41 adverse impacts of solar energy development and will be required for development on all BLM-
42 administered lands, including SEZ and non-SEZ lands.

43
44 The discussions below addressing potential impacts of solar energy development on
45 specific resource areas (Sections 11.4.2 through 11.4.22) also provide an assessment of the
46 effectiveness of the programmatic design features in mitigating adverse impacts from solar

1 **TABLE 11.4.1.2-1 Assumed Development Acreages, Solar MW Output, and Nearest Major**
 2 **Access Road and Transmission Line for the Proposed Dry Lake Valley North SEZ as**
 3 **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 km², 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 km²/MW) of land required.
- c Maximum power output if the SEZ were fully developed using solar trough technologies, assuming 5 acres/MW (0.02 km²/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.

4
 5
 6 development within the SEZ. SEZ-specific design features to address impacts specific to the
 7 proposed Dry Lake Valley North SEZ may be required in addition to the programmatic design
 8 features. The proposed SEZ-specific design features for the Dry Lake Valley North SEZ have
 9 been updated on the basis of revisions to the SEZ since the Draft Solar PEIS (such as boundary
 10 changes and the identification of non-development areas) and on the basis of comments received
 11 on the Draft and Supplement. All applicable SEZ-specific design features identified to date
 12 (including those from the Draft Solar PEIS that are still applicable) are presented in
 13 Sections 11.4.2 through 11.4.22.

14
 15
 16 **11.4.2 Lands and Realty**

17
 18
 19 **11.4.2.1 Affected Environment**

20
 21 The boundary revision of the proposed SEZ has reduced the total area of the proposed
 22 SEZ by 48,148 acres (195 km²) to 28,726 acres (116 km²). This revised area is the southern
 23 portion of the original SEZ. Although the area is reduced in size, the general description of the
 24 southern portion of the area presented in the Draft Solar PEIS is still accurate; the playa lake has
 25 now been identified as a non-development area. The parcel of private land mentioned in the

1 Draft Solar PEIS is surrounded on three sides by the SEZ. Numerous roads and trails enter
2 and/or cross through the proposed SEZ.
3

4 The proposed Dry Lake Valley North SEZ partially overlaps one Section 368 federally
5 designated energy corridor and one locally designated transmission corridor. Both of these
6 corridors were designated in the Ely Resource Management Plan (RMP) in 2008 (BLM 2008).
7 The western locally designated corridor is 2,640 ft (804 m) wide and was designated at the
8 direction of Congress in the Lincoln County Conservation, Recreation, and Development Act
9 (LCCRDA) of 2004 to accommodate a water pipeline, transmission line, and related facilities
10 proposed by the SNWA. The eastern corridor is part of the Southwest Intertie Project and was
11 designated as a Section 368 Corridor in 2009.¹ These existing corridors will be used primarily
12 for the siting of transmission lines and other infrastructure such as pipelines. These existing
13 corridors will be the preferred locations for any transmission development that is required to
14 support solar development and future transmission grid improvements related to the build-out of
15 the Dry Lake Valley North SEZ. Any use of the corridor lands within the Dry Lake Valley North
16 SEZ for solar energy facilities, such as solar panels or heliostats, must be compatible with the
17 future use of the existing corridors. The BLM will assess solar projects in the vicinity of existing
18 corridors on a case-by-case basis. The BLM will review and approve individual project plans of
19 development to ensure compatible development that maintains the use of the corridor.
20

21 22 **11.4.2.2 Impacts** 23

24 There is a large change in the potential land use impacts as a result of the reduction in the
25 amount of area that might be occupied by solar facilities. The maximum developable area for
26 solar development within the originally proposed SEZ was 61,499 acres (102 km²); for the
27 revised SEZ the maximum developable area is 20,055 acres (81 km²). This change results in a
28 smaller area of intense industrial type development, but the solar development would still
29 introduce a new and discordant land use into this isolated and undeveloped area.
30

31 Solar facilities cannot be constructed within the ROWs of existing transmission lines or
32 pipelines because of incompatibility issues such as construction and operational safety, conductor to
33 ground clearances, and the need to maintain access for construction and maintenance of transmission
34 line or pipeline structures. Utility corridors and the Section 368 corridors are much wider than the
35 typical transmission line ROWs (e.g., 200 ft [61 m] for a 500-kV line); thus some use of the corridors
36 for solar facilities might be possible as long as the actual ROW of transmission lines or pipelines was
37 not used. However, such use of the corridors would limit their use for additional transmission in the
38 future. The LCCRDA is congressionally authorized, and because of this, the area of the SEZ
39 within the western ROW corridor (approximately 3,600 acres [14.5 km²]) would likely not be
40 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.

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

10
11 It is now assumed that road access to the SEZ would be to U.S. 93. Although an
12 additional 58 acres (0.2 km²) of land disturbance was assumed for construction of the access
13 road, it is likely that part of the road would follow the route of an existing county road, thereby
14 minimizing land disturbance.

15
16 The existing roads that cross or enter the proposed revised SEZ could be closed or
17 relocated if solar development occurs. If any of these roads are County roads, the County would
18 need to be consulted and would have to agree on their disposition. The County would also have
19 to be consulted on any improvement in the access road from U.S. 93 and on future maintenance
20 requirements.

21 22 23 **11.4.2.3 SEZ-Specific Design Features and Design Feature Effectiveness**

24
25 Required programmatic design features that would reduce impacts on lands and realty
26 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
27 programmatic design features will provide some mitigation for the identified impacts but will not
28 mitigate all adverse impacts. For example, impacts related to the exclusion of many existing and
29 potential uses of the public land, the visual impact of an industrial-type solar facility within an
30 otherwise rural area, and induced land use changes, if any, on nearby or adjacent state and
31 private lands may not be fully mitigated.

32
33 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
34 analyses due to changes to the SEZ boundaries, and consideration of comments received as
35 applicable, the following SEZ-specific design feature for near the revised Dry Lake Valley North
36 SEZ has been identified:

- 37
38 • Priority consideration should be given to utilizing existing County roads to
39 provide construction and operations access to the SEZ. Any potential impacts
40 on existing County roads would be discussed with the County.

41
42 The need for additional SEZ-specific design features will be identified through the
43 process of preparing parcels for competitive offer and subsequent project-specific analysis.
44
45

1 **11.4.3 Specially Designated Areas and Lands with Wilderness Characteristics**

2
3
4 **11.4.3.1 Affected Environment**

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

10
11
12 **11.4.3.2 Impacts**

13
14 A small adverse impact on wilderness characteristics in the Weepah Spring and Big
15 Rocks WAs is still anticipated. The Silver State OHV Trail is located on the east, south, and west
16 sides of the SEZ, but with the change in SEZ boundaries, it is now anticipated that there would
17 be no impact on trail users.

18
19 Other impacts on specially designated areas described in the Draft Solar PEIS remain
20 accurate.

21
22 Improvement of 8 mi (13 km) of the current access road to the proposed SEZ from
23 U.S. 93 would not likely result in additional adverse impacts on surrounding specially designated
24 areas.

25
26
27 **11.4.3.3 SEZ-Specific Design Features and Design Feature Effectiveness**

28
29 Required programmatic design features that would reduce impacts on specially
30 designated areas are described in Section A.2.2 of Appendix A of this Final Solar PEIS (design
31 features for both specially designated areas and visual resources would address impacts).
32 Implementing the programmatic design features will provide some mitigation for the identified
33 impacts but would not mitigate all adverse impacts.

34
35 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
36 analyses due to changes to the SEZ boundaries, and consideration of comments received as
37 applicable, no SEZ-specific design features for specially designated areas and lands with
38 wilderness characteristics have been identified. Some SEZ-specific design features may be
39 identified through the process of preparing parcels for competitive offer and subsequent project-
40 specific analysis.

1 **11.4.4 Rangeland Resources**

2
3
4 **11.4.4.1 Livestock Grazing**

5
6
7 ***11.4.4.1.1 Affected Environment***

8
9 The revision to the boundary of the proposed SEZ removes the Wilson Creek and
10 Simpson grazing allotments from the SEZ. The only allotment still within the proposed SEZ
11 boundary is the Ely Springs Cattle allotment. The grazing permittee has indicated interest in
12 solar development on his private land located near the northeastern corner of the SEZ, and that
13 he would support development in the allotment.

14
15
16 ***11.4.4.1.2 Impacts***

17
18 The anticipated impacts on the Ely Springs Cattle allotment of a potential loss of
19 2,761 AUMs (65%) from that allotment remain the same as identified in the Draft Solar PEIS.
20 The Wilson Creek and Simpson allotments would no longer be directly affected.

21
22 Economic impacts of the loss of grazing capacity must be determined at the allotment-
23 specific level. For most public land grazing operations, any loss of grazing capacity is an
24 economic concern, but it is not possible to assess the extent of that specific impact at this
25 programmatic level. For that reason, only a general assessment is made based on the projected
26 loss of livestock AUMs. This assessment does not consider potential impacts on management
27 costs, the impacts of reducing the scale of an operation, or the impact on the grazing value of the
28 ranch, including the value related to the private land or other associated assets. Based on law and
29 regulation, this loss of value for permittees would not be mitigated directly by the BLM; rather,
30 developers of solar projects within the SEZ would be encouraged to mitigate such losses.

31
32
33 ***11.4.4.1.3 SEZ-Specific Design Features and Design Feature Effectiveness***

34
35 Required programmatic design features that would reduce impacts on livestock grazing
36 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
37 programmatic design features will provide some mitigation for identified impacts but will not
38 mitigate a complete loss of the grazing permit, the loss of livestock AUMs, or the loss of value in
39 ranching operations, including private land values.

40
41 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
42 analyses due to changes to the SEZ boundaries, and consideration of comments received as
43 applicable, the following SEZ-specific design feature for livestock has been identified:
44

- 1 • Within the Ely Springs cattle allotment, solar development should be sited to
2 minimize the number of pastures affected, and existing range improvements
3 should be relocated in coordination with the grazing permittee.
4

5 The need for additional SEZ-specific design features will be identified through the
6 process of preparing parcels for competitive offer and subsequent project-specific analysis.
7

8 9 **11.4.4.2 Wild Horses and Burros**

10 11 ***11.4.4.2.1 Affected Environment***

12 As presented in the Draft Solar PEIS, 5.4% of the Silver King HMA occurred within the
13 original boundaries of the Dry Lake Valley North SEZ (Figure 11.4.4.2-1 of the Draft Solar
14 PEIS). However, the revised area of the SEZ now avoids all but 0.02% of the Silver King HMA
15 (Figure 11.4.4.2-1).
16
17

18 19 ***11.4.4.2.2 Impacts***

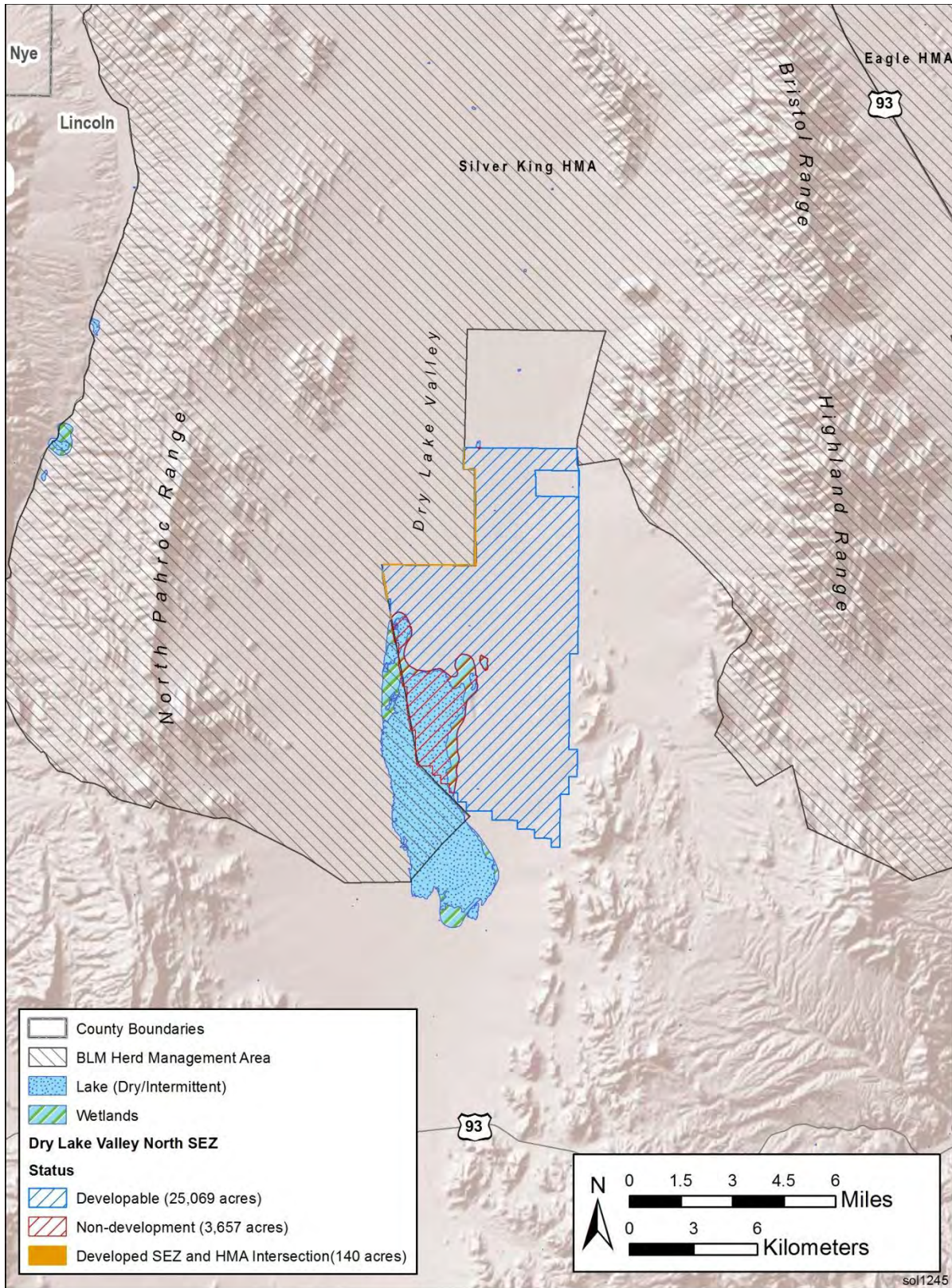
20 As presented in the Draft Solar PEIS, solar energy development within the proposed
21 Dry Lake Valley North SEZ could have directly affected about 32,440 acres (131.3 km²), more
22 than 5% of the Silver King HMA (BLM 2010a). This was considered a moderate impact on the
23 wild horse population within the HMA. Solar energy development within the revised area of the
24 Dry Lake Valley North SEZ would directly affect only 140 acres (0.6 km²) of this HMA, which
25 is considered a small potential impact. Also, the change in assumed access road assumption (to
26 connect to U.S. 93) means that the access road would not cross through the Silver King HMA.
27
28

29 30 ***11.4.4.2.3 SEZ-Specific Design Features and Design Feature Effectiveness***

31 Required programmatic design features that would reduce impacts on wild horses and
32 burros are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
33 programmatic design features will provide some mitigation for the identified impacts.
34
35

36 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
37 analyses due to changes to the SEZ boundaries, and consideration of comments received as
38 applicable, the following SEZ-specific design feature to address impacts on wild horses and
39 burros has been identified:
40

- 41 • Installation of fencing and access control, provision for movement corridors,
42 delineation of open range, traffic management (e.g., vehicle speeds),
43 compensatory habitat restoration, and access to or development of water
44 sources should be coordinated with the BLM.
45
46



1

2

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)

3

1 With the implementation of required programmatic and SEZ-specific design features,
2 impacts on wild horses would be small. The need for additional SEZ-specific design features will
3 be identified through the process of preparing parcels for competitive offer and subsequent
4 project-specific analysis.
5
6

7 **11.4.5 Recreation**

8
9

10 **11.4.5.1 Affected Environment**

11

12 The boundary of the proposed SEZ has been reduced by 48,148 acres (195 km²), and the
13 SEZ has been reduced in length from about 25 mi (40 km) to about 11 mi (17.7 km).
14
15

16 **11.4.5.2 Impacts**

17

18 Recreational use of lands developed for solar energy production, including OHV use of
19 designated roads and trails, would be precluded. The types of impacts described in the Draft
20 Solar PEIS are still accurate but would take place on substantially fewer acres, leading to a
21 reduction in the potential level of impact on recreational users.
22

23 In addition, lands that are outside the proposed SEZ may be acquired or managed for
24 mitigation of impacts on other resources (e.g., sensitive species). Managing these lands for
25 mitigation could further exclude or restrict recreational use, potentially leading to additional
26 losses in recreational opportunities in the region. The impact of acquisition and management of
27 mitigation lands would be considered as a part of the environmental analysis of specific solar
28 energy projects.
29

30 Improvement of 8 mi (13 km) of the existing access road to the proposed SEZ from
31 U.S. 93 would benefit recreational users of the area.
32
33

34 **11.4.5.3 SEZ-Specific Design Features and Design Feature Effectiveness**

35

36 Required programmatic design features that would reduce impacts on recreation are
37 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
38 programmatic design features will provide some mitigation for the identified impacts
39

40 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
41 analyses due to changes to the SEZ boundaries, and consideration of comments received as
42 applicable, the following SEZ-specific design feature for recreation has been identified:
43

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

1 The need for additional SEZ-specific design features will be identified through the
2 process of preparing parcels for competitive offer and subsequent project-specific analysis.
3
4

5 **11.4.6 Military and Civilian Aviation**

6
7

8 **11.4.6.1 Affected Environment**

9

10 Although the size of the proposed Dry Lake Valley North SEZ has been substantially
11 reduced, the discussion of military uses of the SEZ in the Draft Solar PEIS remains valid.
12 Portions of the proposed Dry Valley Lake North SEZ are covered by two MTRs with 200-ft
13 (61-m) AGL operating limits and a major special use airspace (SUA). The area is completely
14 included within the airspace use boundary of the NTTR. Supersonic speeds are authorized at
15 and above 5,000 AGL (1,524 m) in the NTTR in this area.
16
17

18 **11.4.6.2 Impacts**

19

20 Impacts described in the Draft Solar PEIS remain valid and have been updated with
21 additional input from the DoD. Impacts include the following:
22

- 23 • Light from solar energy facilities could affect DoD nighttime operations.
24

25 Through comments on the Draft Solar PEIS and the Supplement to the Draft, the DoD
26 expressed concern for solar energy facilities that might affect military test and training
27 operations. The DoD requested that the proposed Dry Lake Valley North area be removed from
28 consideration as an SEZ and that the entire area (original and remaining SEZ) be identified as
29 an exclusion area. If the area is not eliminated from consideration, the DoD requests that the
30 technology at the site be restricted to low-profile, low-glare PV technologies under 50 ft AGL
31 (15 m), similar to the PV I array at Nellis Air Force Base.
32
33

34 **11.4.6.3 SEZ-Specific Design Features and Design Feature Effectiveness**

35

36 Required programmatic design features that would reduce impacts on military and
37 civilian aviation are described in Section A.2.2 of Appendix A of this Final Solar PEIS. The
38 programmatic design features require early coordination with the DoD to identify and avoid,
39 minimize, and/or mitigate, if possible, potential impacts on the use of military airspace and
40 military testing activities.
41

42 No SEZ-specific design features to protect either military airspace or civilian aviation
43 operations have been identified in this Final Solar PEIS. Some SEZ-specific design features may
44 be identified through the process of preparing parcels for competitive offer and subsequent
45 project-specific analysis.
46

1 **11.4.7 Geologic Setting and Soil Resources**

2
3
4 **11.4.7.1 Affected Environment**

5
6
7 **11.4.7.1.1 Geologic Setting**

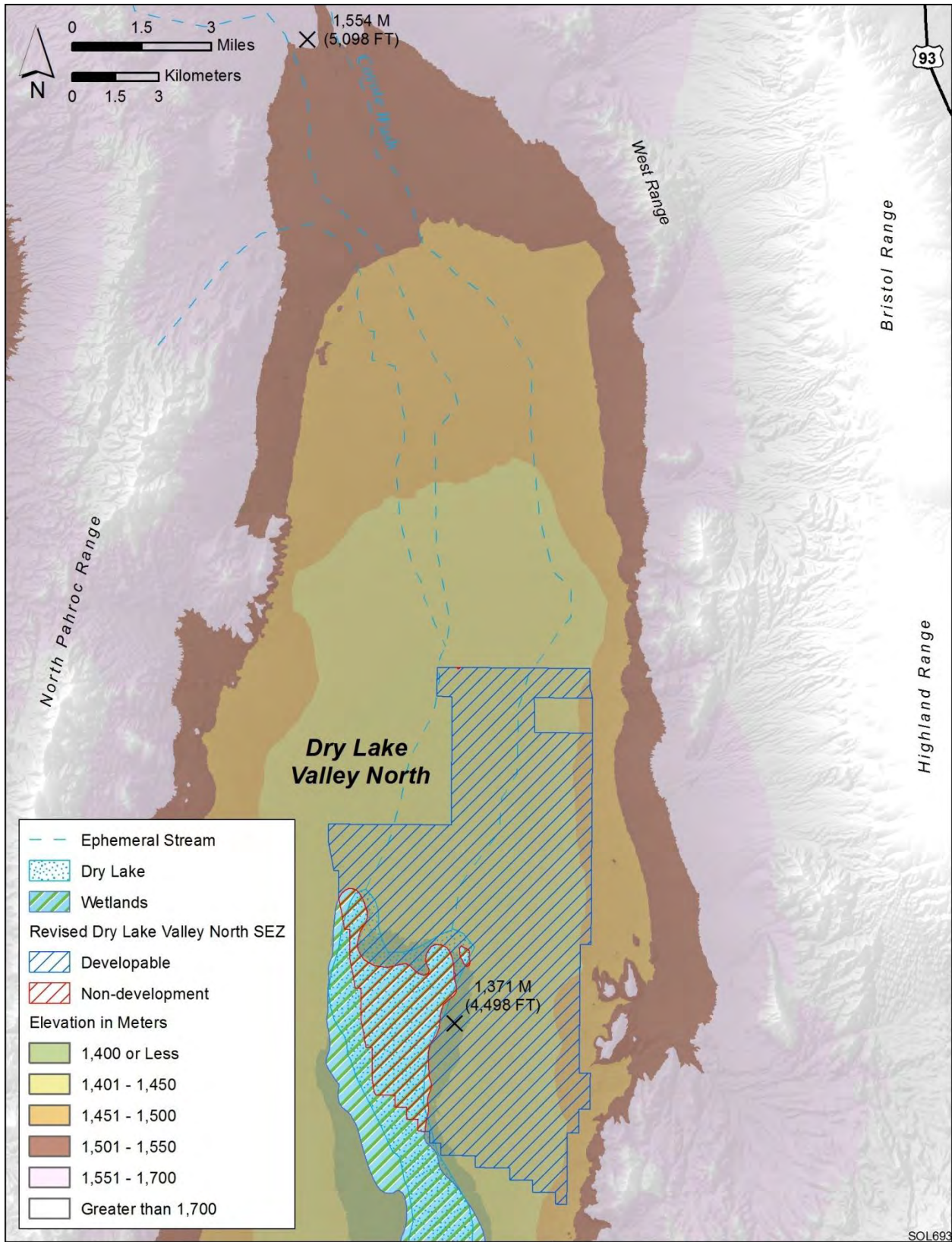
8
9 Data provided in the Draft Solar PEIS remain valid, with the following updates:

- 10
11 • The terrain of the proposed Dry Lake Valley North SEZ slopes gently to the
12 west and southwest (Figure 11.4.7.1-1). The boundaries of the proposed SEZ
13 have been changed to exclude mainly the northern portion of the SEZ. Within
14 this revised area, about 3,657 acres (15 km²) of wetland and dry lake have
15 been identified as non-development areas. On the basis of these changes, the
16 elevations range from about 4,800 ft (1,463 m) at its northeast corner to about
17 4,498 ft (1,370 m) near the SEZ's southwest corner at Dry Lake.

18
19
20 **11.4.7.1.2 Soil Resources**

21
22 Data provided in the Draft Solar PEIS remain valid, with the following updates:

- 23
24 • Soils within the proposed Dry Lake Valley North SEZ as revised are
25 predominantly a mix of sandy loams, silt loams, loamy sands, and loams;
26 the Saltydog–Ambush–Panacker and Koyen–Geer associations now make
27 up about 46% of the soil coverage at the site (Table 11.4.7.1-1).
- 28
29 • Soil unit coverage at the proposed Dry Lake Valley North SEZ as revised is
30 shown in Figure 11.4.7.1-2. Taken together, the new SEZ boundaries and
31 non-development areas eliminate 2,415 acres (9.8 km²) of the Saltydog–
32 Ambush–Panacker association, 4,339 acres (18 km²) of the Koyen–Geer
33 association, 908 acres (3.7 km²) of the Tybo–Leo association, 2,755 acres
34 (11 km²) of the Ewelac–Playas association, 1,210 acres (4.9 km²) of the
35 Cliffdown–Geer association, 3,640 acres (14.7 km²) of the Ambush–Penoyer
36 association, 856 acres (3.5 km²) of the Geer–Penoyer association, 2,488 acres
37 (10 km²) of the Saltydog–Geer association, 1,599 acres (6.5 km²) of the
38 Ambush–Panacker–Playas association, 1,075 acres (4.4 km²) of the Ursine
39 association, 6,999 acres (28 km²) of the Koyen–Slaw–Penoyer association,
40 6,366 acres (26 km²) of the Koyen–Slaw–Penoyer association, 8,793 acres
41 (36 km²) (all) of the Koyen–Penoyer association, 4,634 acres (19 km²) (all)
42 of the Watoopah gravelly loamy sand, 2,267 acres (9.2 km²) (all) of the
43 Penoyer–Geer association, 797 acres (3.2 km²) (all) of the Ursine-moderately
44 sloping-Mezzer-Ursine association, and 327 acres (1.3 km²) (all) of the
45 Leo-Delamar association.



1

2 **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).

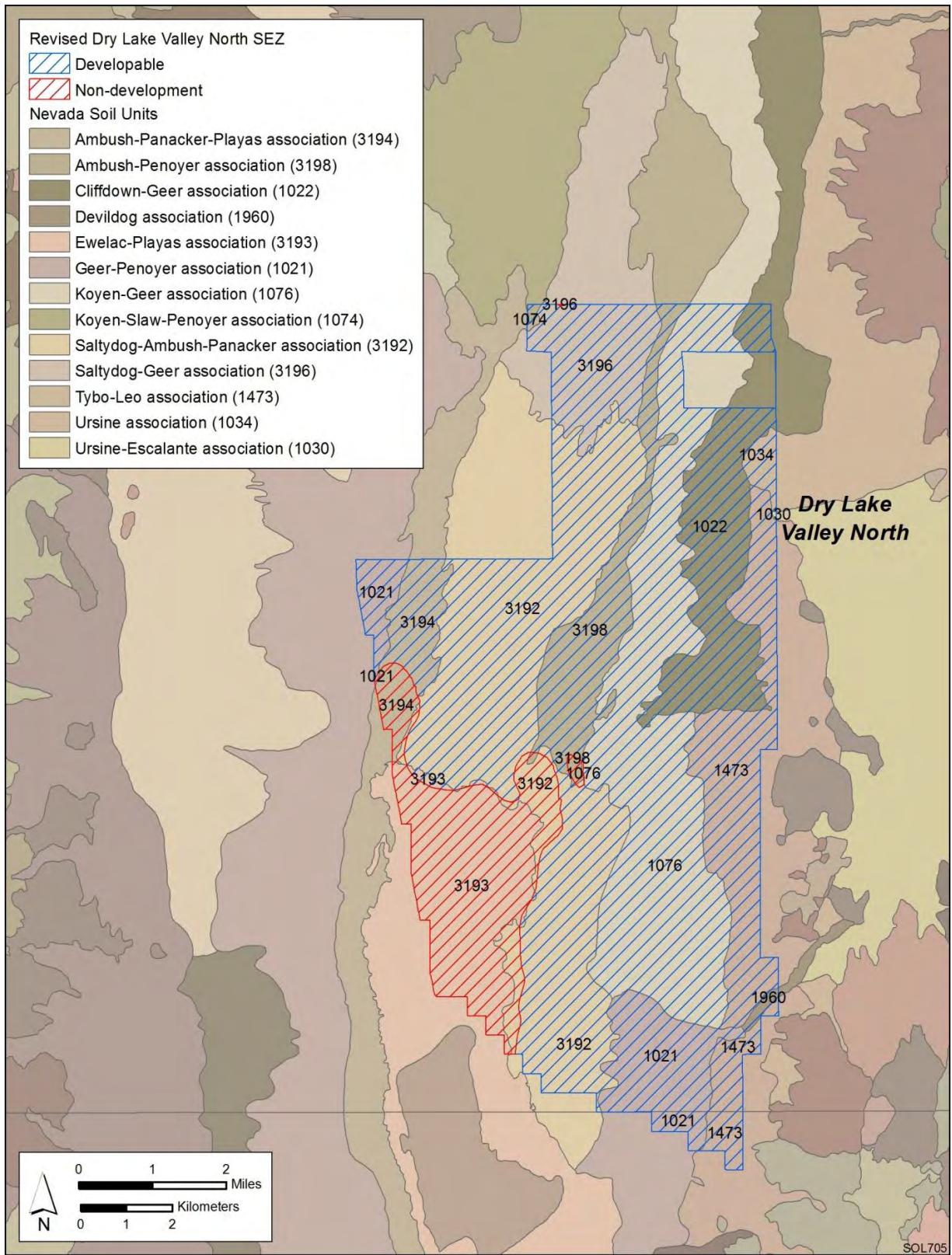
^c To convert from acres to km², multiply by 0.004047.

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 m²) per year (average); WEG 2, 134 tons (122 metric tons) per acre (4,000 m²) per year; WEGs 3 and 4 (and 4L), 86 tons (78 metric tons) per acre (4,000 m²) per year; WEG 5, 56 tons (51 metric tons) per acre (4,000 m²) per year; WEG 6, 48 tons (44 metric tons) per acre (4,000 m²) per year; WEG 7, 38 tons (34 metric tons) per acre (4,000 m²) per year; and WEG 8, 0 tons (0 metric tons) per acre (4,000 m²) 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 km²) 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 km²) 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 km²) 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 km²) 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 km²) 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 km²) 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 km²) 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).



1

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

1 **11.4.7.2 Impacts**

2
3 Impacts on soil resources would occur mainly as a result of ground-disturbing activities
4 (e.g., grading, excavating, and drilling), especially during the construction phase of a solar
5 project. Because impacts on soil resources result from ground-disturbing activities in the project
6 area, soil impacts would be roughly proportional to the size of a given solar facility, with larger
7 areas of disturbed soil having a greater potential for impacts than smaller areas (Section 5.7.2).
8 The assessment provided in the Draft Solar PEIS remains valid, with the following updates:
9

- 10 • Impacts related to wind erodibility are reduced because the identification of
11 new SEZ boundaries and non-development areas eliminates 40,813 acres
12 (165 km²) of moderately erodible soils and 6,999 acres (28 m²) of highly
13 erodible soils (Koyen–Slaw–Penoyer association) from development.
14
15 • Impacts related to water erodibility are reduced because the identification of
16 new SEZ boundaries and non-development areas eliminates 33,571 acres
17 (136 km²) of moderately erodible soils and 2,267 acres (9.2 km²) of highly
18 erodible soils (Penoyer–Geer association) from development.
19
20

21 **11.4.7.3 SEZ-Specific Design Features and Design Feature Effectiveness**

22
23 Required programmatic design features that would reduce impacts on soils are described
24 in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design
25 features will reduce the potential for soil impacts during all project phases.
26

27 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
28 analyses due to changes to the SEZ boundaries, and consideration of comments received as
29 applicable, no SEZ-specific design features for soil resources were identified. Some SEZ-
30 specific design features may be identified through the process of preparing parcels for
31 competitive offer and subsequent project-specific analysis.
32
33

34 **11.4.8 Minerals (Fluids, Solids, and Geothermal Resources)**

35
36 A mineral potential assessment for the proposed Dry Lake Valley North SEZ has been
37 prepared and reviewed by BLM mineral specialists knowledgeable about the region where the
38 SEZ is located (BLM 2012a). The BLM is proposing to withdraw the SEZ from settlement, sale,
39 location, or entry under the general land laws, including the mining laws, for a period of 20 years
40 (see Section 2.2.2.2.4 of this Final Solar PEIS). The potential impacts of this withdrawal are
41 discussed in Section 11.4.24.
42
43

44 **11.4.8.1 Affected Environment**

45
46 The revised proposed SEZ contains two existing oil and gas leases that are classified as
47 nonproducing. This is a revision of the estimate of six existing leases in the Draft Solar PEIS.

1 There are no existing mining claims or geothermal leases within the revised SEZ. The rest of the
2 description of the SEZ in the Draft Solar PEIS remains valid.
3
4

5 **11.4.8.2 Impacts**

6

7 The two existing oil and gas leases are prior existing rights that would be protected as
8 required under current regulations. For the purpose of this analysis, it was assumed that future
9 development of oil and gas resources would continue to be possible, since such development
10 could occur under the existing leases or from directional drilling from new leases. Since the SEZ
11 does not contain existing mining claims, it was also assumed that there would be no future loss
12 of locatable mineral production. The production of common minerals might take place in the
13 SEZ in areas not directly developed for solar energy production. Since the SEZ has had no
14 history of development of geothermal resources or of leasing interest, it is not anticipated that
15 solar development would adversely affect the development of geothermal resources.
16
17

18 **11.4.8.3 SEZ-Specific Design Features and Design Feature Effectiveness**

19

20 Required programmatic design features that would reduce impacts on mineral extraction
21 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
22 programmatic design features will provide adequate protection of mineral resources.
23

24 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
25 analyses due to changes to the SEZ boundaries, and consideration of comments received as
26 applicable, no SEZ-specific design features to address impacts on minerals have been identified
27 in this Final Solar PEIS. Some SEZ-specific design features may be identified through the
28 process of preparing parcels for competitive offer and subsequent project-specific analysis.
29
30

31 **11.4.9 Water Resources**

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34 **11.4.9.1 Affected Environment**

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36 The overall size of the proposed Dry Lake Valley North SEZ has been reduced by 63%
37 from the area described in the Draft Solar PEIS, resulting in a total area of 28,726 acres
38 (116 km²). The description of the affected environment given in the Draft Solar PEIS relevant
39 to water resources at the proposed Dry Lake Valley North SEZ remains valid and is summarized
40 in the following paragraphs.
41

42 The Dry Lake Valley North SEZ is within the Central Nevada Desert subbasin of the
43 Great Basin hydrologic region. The SEZ is located in the Dry Lake Valley and is surrounded
44 by uplifted volcanic and carbonate rock mountain ranges. The average precipitation ranges
45 from 7 to 16 in./yr (18 to 41 cm/yr), and the estimated pan evaporation rate is about 80 in./yr
46 (203 cm/yr). No perennial surface water features are present in the SEZ. There is a dry lake that

1 covers an area of approximately 8,064 acres mi² (33 km²) in the southern portion of the valley.
2 Coyote Wash and Cherry Creek flow from north to south through the SEZ, along with several
3 other intermittent/ephemeral streams and braided channels of alluvial outwash plains in the
4 region. Flood hazards have not been identified for the area surrounding the SEZ, but intermittent
5 flooding may occur along the intermittent/ephemeral washes and within the dry lake area. The
6 Dry Lake Valley groundwater basin consists of basin-fill deposits on the order of 3 mi (5 km) in
7 thickness and is underlain by sequences of carbonate rock aquifers. The carbonate rock aquifers
8 are a part of the White River Groundwater Flow System (a subunit of the Colorado River
9 groundwater system), a regional-scale groundwater system that generally flows southward and
10 terminates at Muddy River Springs, Rogers and Blue Point Springs, and the Virgin River.
11 Estimates of groundwater recharge to the Dry Lake Valley range from 5,000 to 15,667 ac-ft/yr
12 (6.2 to 19 million m³/yr), with a depth to groundwater of more than 400 ft (122 m). The
13 hydraulic gradient in the basin-fill aquifer was estimated to be 0.0025 in a southward direction.
14 Groundwater quality varies in the Dry Lake Valley basin, but high concentrations (exceeding, or
15 near to, the MCL) of arsenic, thallium, and iron have been found in water samples.
16

17 All waters in Nevada are public property, and the NDWR is the agency responsible for
18 managing both surface and groundwater resources. The Dry Lake Valley groundwater basin is
19 not a designated groundwater basin; thus there are no specific beneficial uses set by the NDWR.
20 The NDWR sets the perennial yield for each groundwater basin, which is technically the amount
21 of water available for water rights allocations. The Dry Lake Valley groundwater basin's
22 perennial yield was set at 12,700 ac-ft/yr (15.7 million m³/yr) according to State Engineer's
23 Ruling 5875 (NDWR 2008), which also granted a 11,584 ac-ft/yr (14.3 million m³/yr) water
24 right to the SNWA. State Engineer's Ruling 5875 from 2008 and State Engineer's Ruling 5993
25 (NDWR 2009) from 2009 resulted in a full allocation of water rights in the Dry Lake Valley
26 groundwater basin; however, in October 2009, the Seventh Judicial District Court of Nevada
27 issued an order to vacate the State Engineer's Ruling. The SNWA appealed this decision to the
28 Nevada Supreme Court in November 2009, which resulted in the lower court and the NDWR
29 having to reconsider SNWA's original water rights application (Legislative Council
30 Bureau 2010). The NDWR held a hearing on the water right application in the fall of 2011,
31 and the NDWR issued a decision on March 22, 2012, to grant SNWA's application for
32 11,584 ac-ft/yr (14.3 million m³/yr) of water (SNWA 2012a; NDWR 2012). Thus, the current
33 estimate of unallocated water rights in the basin is approximately 50 ac-ft (0.06 million m³).
34

35 In addition to the water resources information provided in the Draft Solar PEIS, this
36 section provides a planning-level inventory of available climate, surface water, and groundwater
37 monitoring stations within the immediate vicinity of the Dry Lake Valley North SEZ and
38 surrounding basin. Additional data regarding climate, surface water, and groundwater conditions
39 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.
40 Fieldwork and hydrologic analyses needed to determine 100-year floodplains and jurisdictional
41 water bodies would need to be coordinated with appropriate federal, state, and local agencies.
42 Areas within the Dry Lake Valley North SEZ that are found to be within a 100-year floodplain
43 will be identified as non-development areas. Any water features within the Dry Lake Valley
44 North SEZ determined to be jurisdictional will be subject to the permitting process described in
45 the CWA.
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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 km², multiply by 0.004047.

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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).

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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).

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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 ft³ to m³, multiply by 0.0283.

^b To convert mi to km, multiply by 1.6093.

Source: USGS (2012b).

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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).

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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

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**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).

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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.

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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

1 **TABLE 11.4.9.1-7 Groundwater Surface Elevations Relevant to the Proposed Dry Lake Valley**
 2 **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).

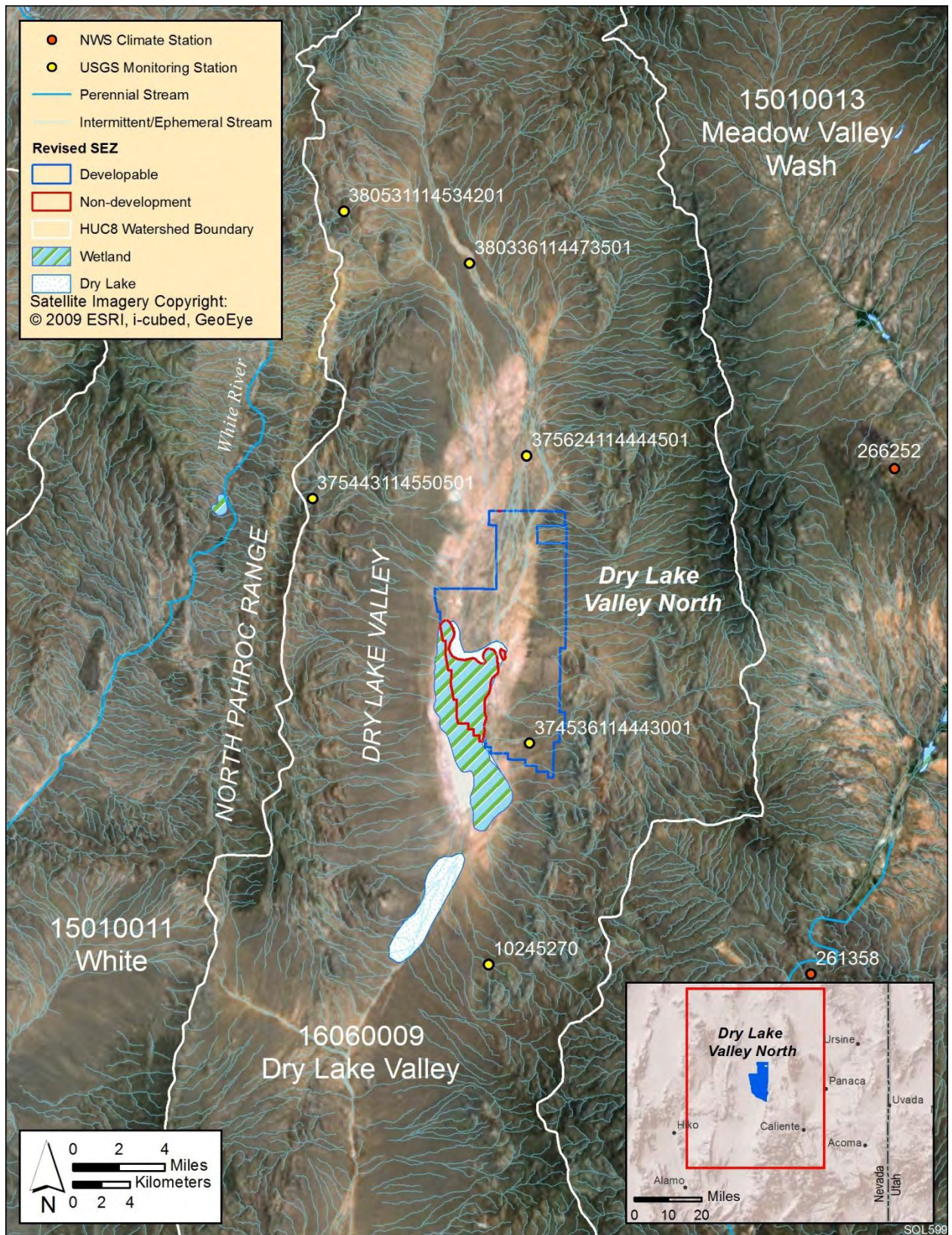
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 5 moderate sensitivity to land disturbance. The northeastern portion of the SEZ has a particularly
 6 dense aggregation of intermittent/ephemeral channels classified as having moderate sensitivity to
 7 disturbance (Figure 11.4.9.2-1).

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 10 **11.4.9.2.2 Water Use Requirements for Solar Energy Technologies**

11
 12 Changes in the Dry Lake Valley North boundaries resulted in significant changes to the
 13 estimated water use requirements during construction and operations. This section presents
 14 changes in water use estimates for the reduced SEZ area and additional analyses pertaining to
 15 groundwater. The additional analyses of groundwater include a basin-scale groundwater budget
 16 and a simplified, one-dimensional groundwater model of potential groundwater drawdown. Only
 17 a summary of the results from these groundwater analyses is presented in this section; more
 18 information on methods and results is presented in Appendix O.

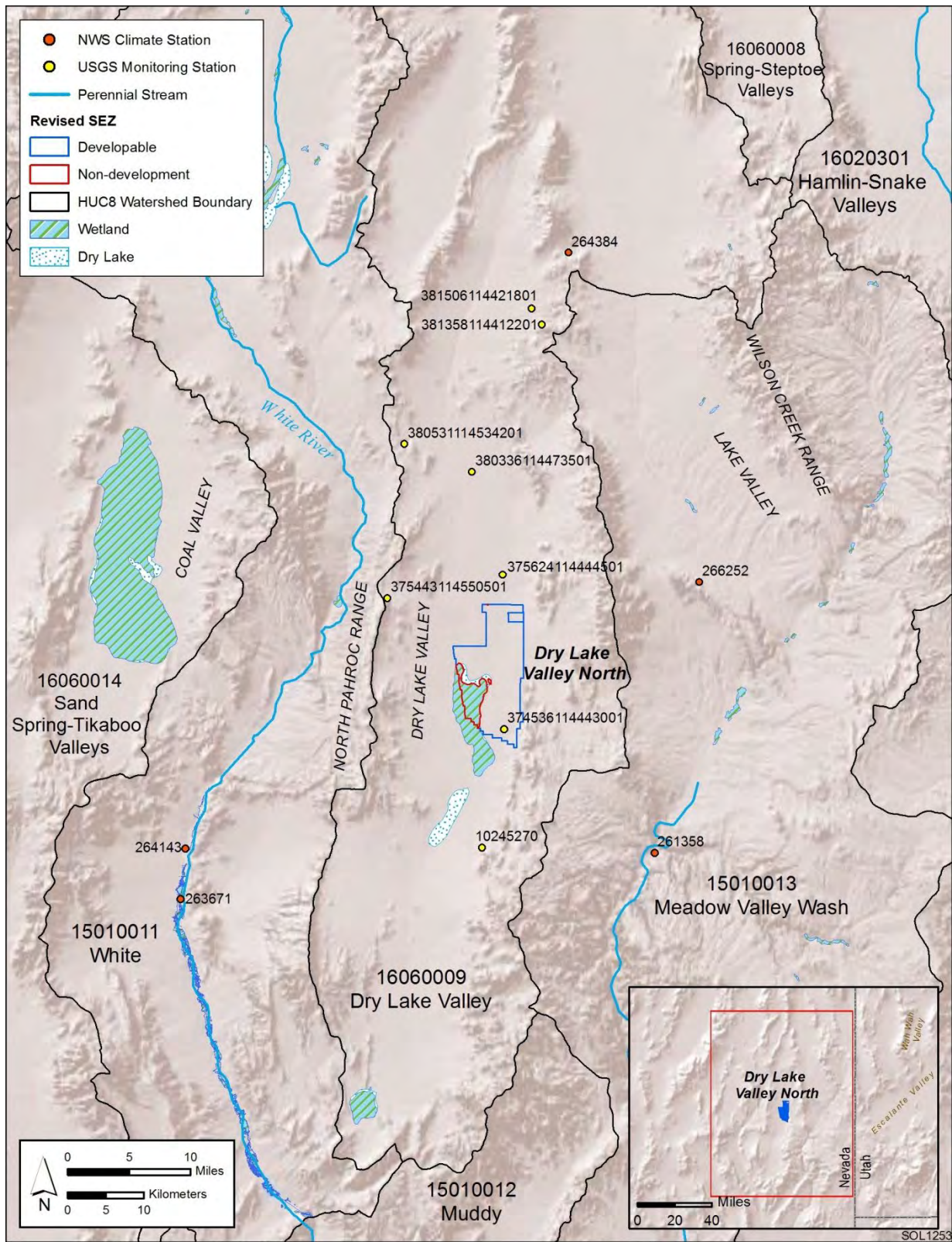
19
 20 Table 11.4.9.2-1 presents the revised estimates of water requirements for both
 21 construction and operation of solar facilities at the Dry Lake Valley North SEZ, assuming full
 22 build-out of the SEZ and accounting for its decreased size. A basin-scale groundwater budget
 23 was assembled by using available data on groundwater inputs, outputs, and storage; results are
 24 presented in Table 11.4.9.2-2.

25
 26 The estimated total water use requirements during the peak construction year are as
 27 high as 2,814 ac-ft/yr (3.5 million m³/yr), which is 56% of the low estimate of average annual
 28 recharge to the basin. Groundwater withdrawals are not reported for the basin, but currently



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



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

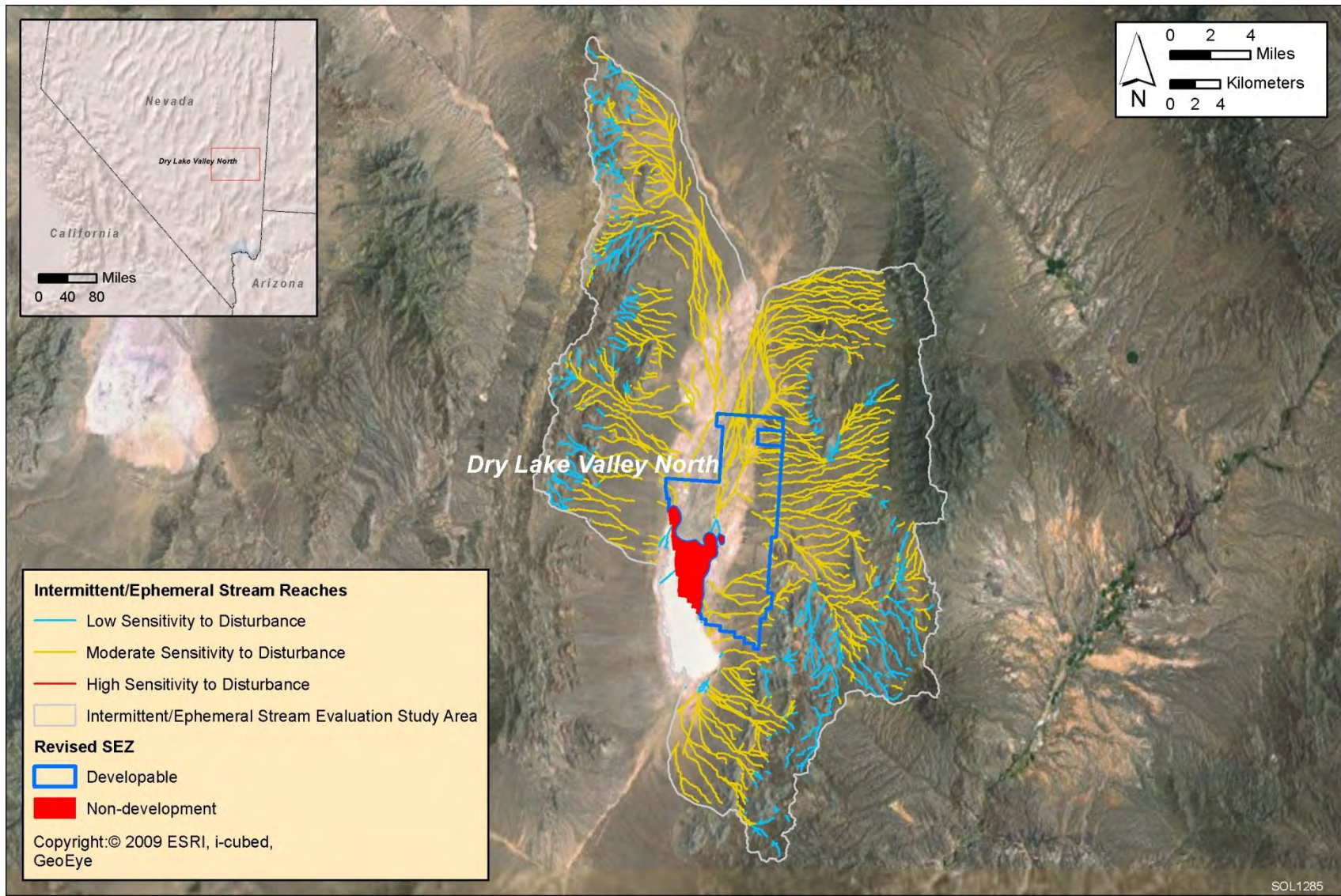


FIGURE 11.4.9.2-1 Intermittent/Ephemeral Stream Channel Sensitivity to Surface Disturbances in the Vicinity of the Proposed Dry Lake Valley North SEZ as Revised

1 **TABLE 11.4.9.2-1 Estimated Water Requirements for the Proposed Dry Lake Valley**
 2 **North SEZ as Revised^a**

Activity	Parabolic Trough	Power Tower	Dish Engine	PV
Construction—Peak Year				
<i>Water use requirements</i>				
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
<i>Wastewater generated</i>				
Sanitary wastewater (ac-ft)	148	90	37	19
Operations				
<i>Water use requirements</i>				
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
<i>Total water use requirements</i>				
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
<i>Wastewater generated</i>				
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 m³, multiply by 1,234.

^c NA = not applicable.

3
 4
 5 the Dry Lake Valley basin has 12,649 ac-ft/yr (15.6 million m³/yr) of permitted water rights
 6 (NDWR 2010, 2012). Given the short duration of construction activities, the water use estimate
 7 for construction is not a primary concern for water resources in the basin. The long duration of
 8 groundwater pumping during operations (20 years) poses a greater threat to groundwater
 9 resources. This analysis considered low, medium, and high groundwater pumping scenarios that
 10 represent full build-out of the SEZ assuming PV, dry-cooled parabolic trough, and wet-cooled
 11 parabolic trough, respectively (a 30% operational time was considered for all solar facility types
 12 on the basis of operations estimates for proposed utility-scale solar energy facilities).

13
 14 The low, medium, and high pumping scenarios result in groundwater withdrawals that
 15 range from 114 to 20,112 ac-ft/yr (0.14 to 24.8 million m³/yr), or 2,280 to 402,220 ac-ft (2.8 to
 16 496 million m³) over the 20-year operational period. From a groundwater budgeting perspective,

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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
<i>Inputs</i>	
Recharge (ac-ft/yr) ^{a,b}	5,000–15,667 ^{c,d,e}
<i>Outputs</i>	
Underflow to Delamar Valley (ac-ft/yr)	5,000 ^c
<i>Storage</i>	
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 m³, 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.

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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 m³, multiply by 1,234.
- b Mankinen et al. (2008).
- c Ertec Western, Inc. (1981).

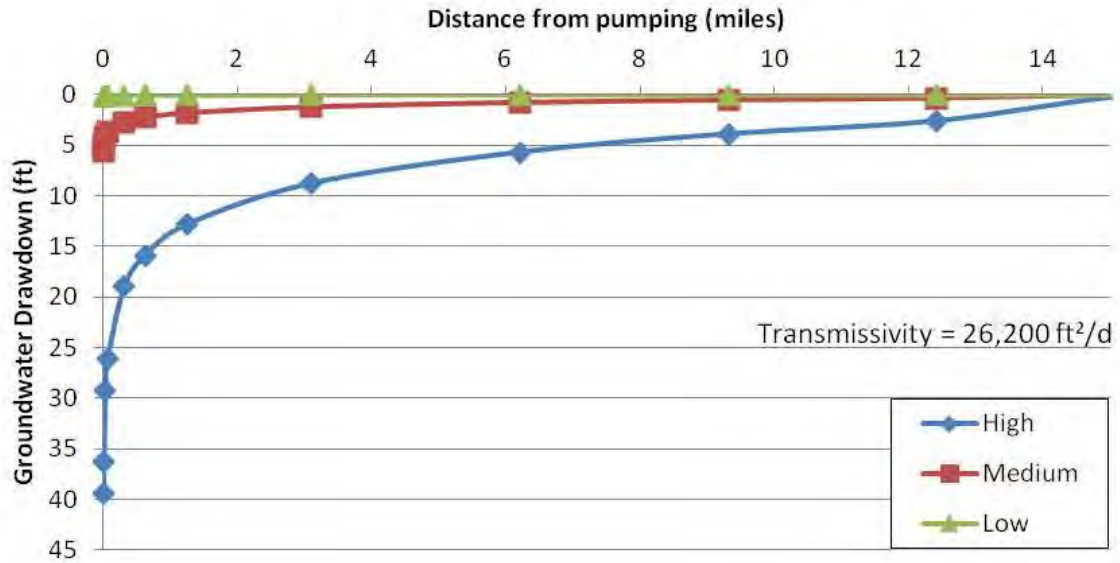
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Currently, the depth to groundwater ranges from 45 to 394 ft (14 to 120 m) in the vicinity of the SEZ (Table 11.4.9.1-7). The modeling results suggest that groundwater withdrawals for solar energy development would result in groundwater drawdown in 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

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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.



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

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7 **11.4.9.2.4 Summary of Impacts on Water Resources**

8
9 The additional information and analyses of water resources presented in this update agree
10 with the information provided in the Draft Solar PEIS, which indicates that the Dry Lake Valley
11 North SEZ is located in a desert valley with predominantly intermittent/ephemeral surface water
12 features and groundwater in a basin-fill aquifer overlaying a regional-scale carbonate rock
13 aquifer system. The NDWR set the perennial yield for Dry Lake Valley at 12,700 ac-ft/yr
14 (15.7 million m³/yr), and this is the basis on which the NDWR (2012) has recently granted water
15 rights that result in a full allocation of the perennial yield of the basin. These baseline conditions
16 suggest that water resources are scarce in the vicinity of the Dry Lake Valley North SEZ and that
17 the primary potential for impacts resulting from solar energy development comes from surface
18 disturbances and groundwater use.

19
20 The change in boundaries of the Dry Lake Valley North SEZ resulted in a decrease in
21 total water demand by approximately 65% for all technologies (Table 11.4.9.2-1), and the areas
22 excluded from the SEZ contain the dry lake and the associated wetlands in the southwest corner
23 of the SEZ as revised. These changes in the SEZ boundaries have reduced potential impacts on
24 surface water features associated with groundwater withdrawal and surface disturbance.

25
26 Disturbance to intermittent/ephemeral stream channels within the Dry Lake Valley
27 North SEZ could have an impact on the critical functions of groundwater recharge, sediment
28 transport, flood conveyance, and ecological habitat in the vicinity of the SEZ. The intermittent/
29 ephemeral stream evaluation suggests that several intermittent/ephemeral channels within the
30 SEZ have a moderate sensitivity to disturbance. Surface disturbances within the Dry Lake Valley
31 North SEZ could also lead to impacts within upstream and downstream reaches of unnamed

1 intermittent/ephemeral streams that flow through the SEZ. Several design features described in
2 Section A.2.2. of Appendix A of this Final Solar PEIS specify measures to reduce impacts on
3 intermittent/ephemeral water features.
4

5 The proposed water use requirements for full build-out scenarios at the Dry Lake Valley
6 North SEZ indicate that the low pumping scenario is preferable, given that the medium and
7 high pumping scenarios have the potential to greatly affect both the annual and long-term
8 groundwater budget, and that the high pumping scenario may impair potential groundwater-
9 surface water connectivity in Dry Lake and the unnamed intermittent/ephemeral streams
10 throughout the SEZ. The availability of groundwater in the Dry Lake Valley North basin will
11 largely depend on water rights availability and decisions made by the NDWR.
12

13 Predicting impacts associated with groundwater withdrawal in desert regions is often
14 difficult given the heterogeneity of aquifer characteristics, the long time period between the onset
15 of pumping and its effects, and limited data. One of the primary mitigation measures to protect
16 water resources is the implementation of long-term monitoring and adaptive management (see
17 Section A.2.4 of Appendix A). For groundwater, this requires a combination of monitoring and
18 modeling to fully identify the temporal and spatial extent of potential impacts. The BLM is
19 currently working on the development of a more detailed numerical groundwater model for the
20 Dry Lake Valley North SEZ that would more accurately predict potential impacts on surface
21 water features and groundwater drawdown. When the detailed model is completed, it will be
22 made available through the project Web site (<http://solareis.anl.gov>) for use by applicants, the
23 BLM, and other stakeholders.
24
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26 **11.4.9.3 SEZ-Specific Design Features and Design Feature Effectiveness**

27

28 Required programmatic design features that would reduce impacts on surface water
29 and groundwater are described in Section A.2.2 of Appendix A of this Final Solar PEIS.
30 Implementing the programmatic design features will provide some protection of and reduce
31 impacts on water resources.
32

33 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
34 analyses due to changes to the SEZ boundaries, and consideration of comments received as
35 applicable, the following SEZ-specific design feature for water resources has been identified:
36

- 37 • Groundwater analyses suggest that full build-out of dry-cooled and wet-
38 cooled technologies is not feasible; for mixed-technology development
39 scenarios, any proposed dry- or wet-cooled projects should utilize water
40 conservation practices.
41

42 The need for additional SEZ-specific design features will be identified through the
43 process of preparing parcels for competitive offer and subsequent project-specific analysis.
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1 **11.4.10 Vegetation**

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4 **11.4.10.1 Affected Environment**

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

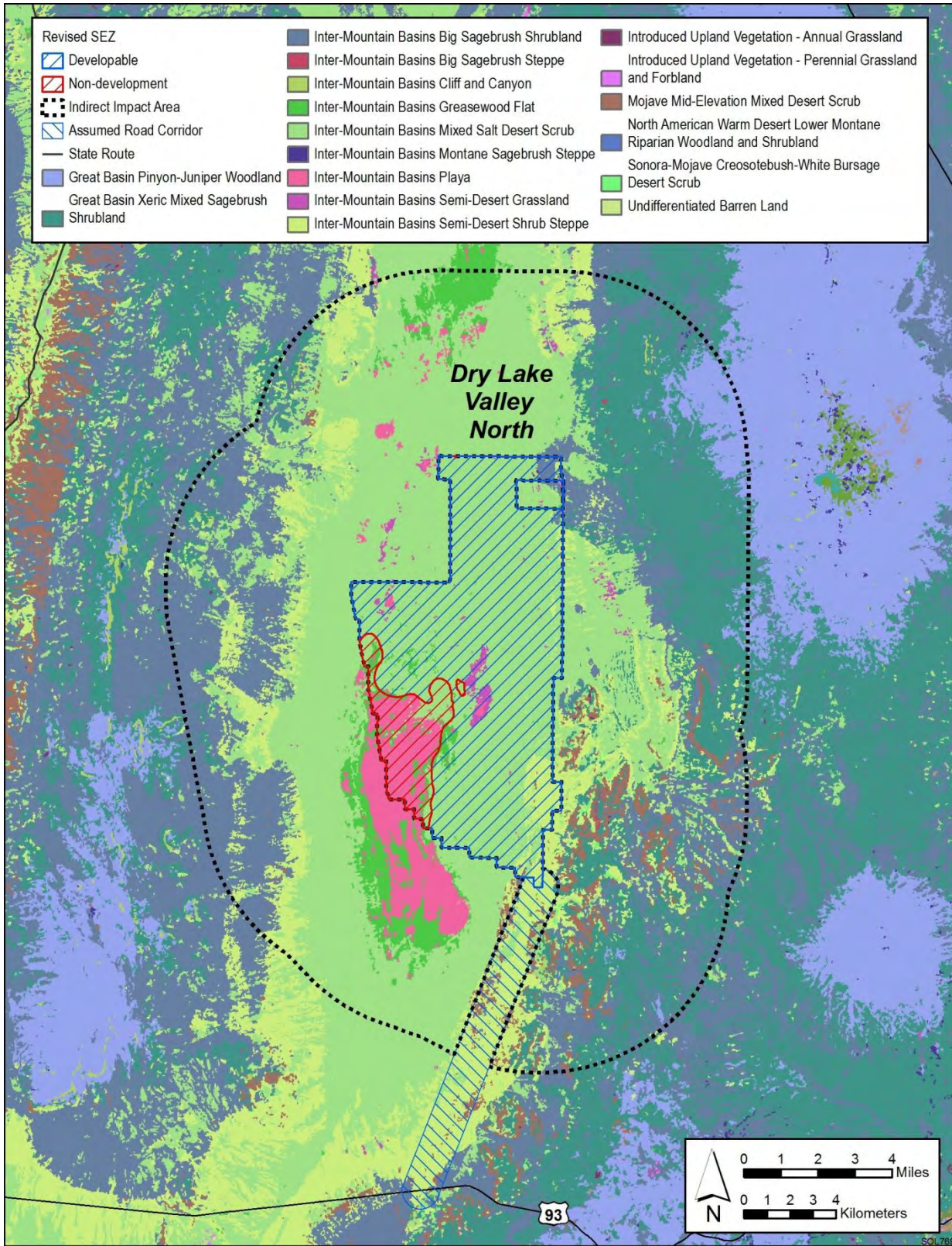
21
22
23 **11.4.10.2 Impacts**

24
25 As presented in the Draft Solar PEIS, the construction of solar energy facilities within
26 the proposed Dry Lake Valley North SEZ would result in direct impacts on plant communities
27 because of the removal of vegetation within the facility footprint during land-clearing and
28 land-grading operations. Approximately 80% of the SEZ would be expected to be cleared
29 with full development of the SEZ. As a result of the changes to the proposed SEZ boundaries,
30 approximately 20,055 acres (81 km²) would be cleared. In addition, approximately 58 acres
31 (0.2 km²) could be directly affected by the assumed access road, although the new access road
32 corridor includes an existing gravel road that could be upgraded.

33
34 Overall impact magnitude categories were based on professional judgment and include
35 (1) *small*: a relatively small proportion ($\leq 1\%$) of the cover type within the SEZ region would be
36 lost; (2) *moderate*: an intermediate proportion (>1 but $\leq 10\%$) of a cover type would be lost; and
37 (3) *large*: $>10\%$ of a cover type would be lost.

38
39
40 **11.4.10.2.1 Impacts on Native Species**

41
42 The analysis presented in the Draft Solar PEIS for the original Dry Lake Valley North
43 SEZ boundaries indicated that development would result in a large impact on five land cover
44 types, a moderate impact on two land cover types, and a small impact on all other land cover
45 types occurring within the SEZ (Table 11.4.10.1-1 in the Draft Solar PEIS). Development within
46 the revised Dry Lake Valley North SEZ could still directly affect most of the cover types



1

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

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

12
13 The Inter-Mountain Basins Cliff and Canyon, Sonora-Mojave Creosotebush-White
14 Bursage Desert Scrub, and Inter-Mountain Basins Greasewood Flat cover types, previously not
15 directly affected by the access road, could be directly affected by the access road because of the
16 revised route. However, the Inter-Mountain Basins Big Sagebrush Steppe cover type would no
17 longer be directly affected by the access road. Because of the change in the indirect impact area
18 assumed location, the Inter-Mountain Basins Curl-leaf Mountain Mahogany woodland and
19 Shrubland, Inter-Mountain Basins Subalpine Limber-Bristlecone Pine Woodland, Great Basin
20 Foothill and Lower Montane Riparian Woodland and Shrubland, Southern Rocky Mountain
21 Mesic Montane Mixed Conifer Forest and Woodland, Inter-Mountain Basins Aspen-Mixed
22 Conifer Forest and Woodland, Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer
23 Forest and Woodland cover types would not be indirectly affected.

24
25 Indirect impacts on habitats associated with the playa, wetlands, or dry washes, including
26 Coyote Wash, within or near the SEZ, as described in the Draft Solar PEIS, could occur. The
27 indirect impacts from groundwater use on plant communities in the region that depend on
28 groundwater could also occur.

31 ***11.4.10.2 Impacts from Noxious Weeds and Invasive Plant Species***

32
33 As presented in the Draft Solar PEIS, land disturbance from project activities and indirect
34 effects of construction and operation within the Dry Lake Valley North SEZ could potentially
35 result in the establishment or expansion of noxious weeds and invasive species populations,
36 potentially including those species listed in Section 11.4.10.1 of the Draft Solar PEIS. Impacts
37 such as reduced restoration success and possible widespread habitat degradation could still
38 occur; however, a small reduction in the potential for such impacts would result from the reduced
39 developable area of the SEZ.

42 **11.4.10.3 SEZ-Specific Design Features and Design Feature Effectiveness**

43
44 Required programmatic design features that would reduce impacts on vegetation are
45 described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific species and
46 habitats will determine how programmatic design features are applied, for example:

- 1 • Dry washes, playas, and wetlands within the SEZ, and dry washes within
2 the access road corridor shall be avoided to the extent practicable, and any
3 impacts minimized and mitigated in consultation with appropriate agencies.
4 A buffer area shall be maintained around wetlands, playas, and dry washes to
5 reduce the potential for impacts.
6
- 7 • Appropriate engineering controls shall be used to minimize impacts on dry
8 wash, playa, marsh, scrub-shrub wetland, riparian, and greasewood flat
9 habitats, including occurrences downstream of solar projects or assumed
10 access road, resulting from surface water runoff, erosion, sedimentation,
11 altered hydrology, accidental spills, or fugitive dust deposition to these
12 habitats. Appropriate buffers and engineering controls will be determined
13 through agency consultation.
14
- 15 • Groundwater withdrawals shall be limited to reduce the potential for indirect
16 impacts on groundwater-dependent communities, habitats dependent on
17 springs associated with the Dry Lake Valley basin, Delamar Valley Basin, or
18 other hydrologically connected basins. Potential impacts on springs shall be
19 determined through hydrological studies.
20

21 It is anticipated that implementation of these programmatic design features will reduce a
22 high potential for impacts from invasive species and impacts on dry washes, playas, springs,
23 riparian habitats, and wetlands to a minimal potential for impact. Residual impacts on
24 groundwater-dependent habitats could result from limited groundwater withdrawal and the like;
25 however, it is anticipated that these impacts would be avoided in the majority of instances.
26

27 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
28 analyses due to changes to the SEZ boundaries, and consideration of comments received as
29 applicable, no SEZ-specific design features have been identified. Some SEZ-specific design
30 features may be identified through the process of preparing parcels for competitive offer and
31 subsequent project-specific analysis.
32

33 **11.4.11 Wildlife and Aquatic Biota**

34 For the assessment of potential impacts on wildlife and aquatic biota, overall
35 impact magnitude categories were based on professional judgment and include (1) *small*: a
36 relatively small proportion ($\leq 1\%$) of the species' habitat within the SEZ region would be lost;
37 (2) *moderate*: an intermediate proportion (> 1 but $\leq 10\%$) of the species' habitat would be lost;
38 and (3) *large*: $> 10\%$ of the species' habitat would be lost.
39
40
41
42

1 **11.4.11.1 Amphibians and Reptiles**

2
3
4 **11.4.11.1.1 Affected Environment**

5
6 As presented in Section 11.4.11.1 of the Draft Solar PEIS, representative amphibian and
7 reptile species expected to occur within the Dry Lake Valley North SEZ include the Great Plains
8 toad (*Bufo cognatus*), red-spotted toad (*Bufo punctatus*), desert horned lizard (*Phrynosoma*
9 *platyrhinos*), Great Basin collared lizard (*Crotaphytus bicinctores*), long-nosed leopard lizard
10 (*Gambelia wislizenii*), side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus*
11 *occidentalis*), western whiptail (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus*
12 *draconoides*), coachwhip (*Masticophis flagellum*), glossy snake (*Arizona elegans*), gophersnake
13 (*Pituophis catenifer*), groundsnake (*Sonora semiannulata*), nightsnake (*Hypsiglena torquata*),
14 and sidewinder (*Crotalus cerastes*). The reduction in the size of the Dry Lake Valley North SEZ
15 does not alter the potential for these species to occur in the affected area.

16
17
18 **11.4.11.1.2 Impacts**

19
20 As presented in the Draft Solar PEIS, solar energy development within the Dry Lake
21 Valley North SEZ could affect potentially suitable habitats for the representative amphibian and
22 reptile species. The analysis presented in the Draft Solar PEIS for the original Dry Lake Valley
23 North SEZ boundaries indicated that development would result in a small impact on the side-
24 blotched lizard, coachwhip, glossy snake, gophersnake, groundsnake, and sidewinder; and a
25 moderate impact on the remainder of the representative amphibian and reptile species
26 (Table 11.4.11.1-1 in the Draft Solar PEIS). The reduction in the developable area of the Dry
27 Lake Valley North SEZ would result in reduced habitat impacts for all representative amphibian
28 and reptile species. The resultant impact levels for most of the representative amphibian and
29 reptile species would be small except for the Great Basin collared lizard and zebra-tailed lizard,
30 for which the impact levels would remain moderate.

31
32
33 **11.4.11.1.3 SEZ-Specific Design Features and Design Feature Effectiveness**

34
35 Required programmatic design features that would reduce impacts on amphibian and
36 reptile species are described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the
37 implementation of required programmatic design features, impacts on amphibian and reptile
38 species will be reduced.

39
40 Because of the changes to the SEZ boundaries, the SEZ-specific design feature identified
41 in Section 11.4.11.1.3 of the Draft Solar PEIS (i.e., dry lake and wash habitats should be
42 avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar
43 PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of
44 comments received as applicable, no SEZ-specific design features for amphibians and reptile
45 species have been identified. Some SEZ-specific design features may be identified through the
46 process of preparing parcels for competitive offer and subsequent project-specific analysis.

1 **11.4.11.2 Birds**

2
3
4 **11.4.11.2.1 Affected Environment**

5
6 As presented in Section 11.4.11.2.1 of the Draft Solar PEIS, a large number of bird
7 species could occur or have potentially suitable habitat within the affected area of the proposed
8 Dry Lake Valley North SEZ. Representative bird species identified in the Draft Solar PEIS
9 included (1) shorebirds: killdeer (*Charadrius vociferus*); (2) passerines: ash-throated flycatcher
10 (*Myiarchus cinerascens*), Bewick’s wren (*Thryomanes bewickii*), black-throated sparrow
11 (*Amphispiza bilineata*), cactus wren (*Campylorhynchus brunneicapillus*), common poorwill
12 (*Phalaenoptilus nuttallii*), common raven (*Corvus corax*), Costa’s hummingbird (*Calypte*
13 *costae*), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*),
14 ladder-backed woodpecker (*Picoides scalaris*), Le Conte’s thrasher (*Toxostoma lecontei*),
15 lesser nighthawk (*Chordeiles acutipennis*), loggerhead shrike (*Lanius ludovicianus*), northern
16 mockingbird (*Mimus polyglottos*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza*
17 *belli*), Say’s phoebe (*Sayornis saya*), verdin (*Auriparus flaviceps*), and western kingbird
18 (*Tyrannus verticalis*); (3) raptors: American kestrel (*Falco sparverius*), golden eagle (*Aquila*
19 *chrysaetos*), great horned owl (*Bubo virginianus*), long-eared owl (*Asio otus*), red-tailed hawk
20 (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*); and (4) upland gamebirds: chukar
21 (*Alectoris chukar*), Gambel’s quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*),
22 white-winged dove (*Zenaida asiatica*), and wild turkey (*Meleagris gallopavo*). The reduction in
23 the size of the Dry Lake Valley North SEZ does not alter the potential for these species or other
24 bird species to occur in the affected area.

25
26
27 **11.4.11.2.2 Impacts**

28
29 As presented in the Draft Solar PEIS, solar energy development within the Dry Lake
30 Valley North SEZ could affect potentially suitable bird habitats. The analysis presented in the
31 Draft Solar PEIS based on the original Dry Lake Valley North SEZ boundaries indicated that
32 development would result in a small impact on Bewick’s wren, black-throated sparrow,
33 cactus wren, Costa’s hummingbird, Say’s phoebe, verdin, Gambel’s quail, white-winged dove,
34 and wild turkey; and a moderate impact on the remainder of the representative bird species
35 (Table 11.4.11.2-1 in the Draft Solar PEIS). The reduction in the developable area of the Dry
36 Lake Valley North SEZ would result in reduced habitat impacts for all representative bird
37 species. The resultant impact levels for most of the representative bird species would be small
38 except for the Le Conte’s thrasher, for which the impact level would remain moderate.

39
40
41 **11.4.11.2.3 SEZ-Specific Design Features and Design Feature Effectiveness**

42
43 Required programmatic design features that would reduce impacts on bird species are
44 described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of
45 required programmatic design features, impacts on bird species will be reduced.

1 Because of the change in boundaries of the SEZ, the SEZ-specific design feature
2 identified in Section 11.4.11.2.3 of the Draft Solar PEIS (i.e., dry lake and wash habitats should
3 be avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft
4 Solar PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration
5 of comments received as applicable, no SEZ-specific design features for birds have been
6 identified. Some SEZ-specific design features may be identified through the process of preparing
7 parcels for competitive offer and subsequent project-specific analysis.
8
9

10 **11.4.11.3 Mammals**

11
12

13 ***11.4.11.3.1 Affected Environment***

14

15 As presented in Section 11.4.11.3.1 of the Draft Solar PEIS, a large number of mammal
16 species were identified that could occur or have potentially suitable habitat within the affected
17 area of the proposed Dry Lake Valley North SEZ. Representative mammal species identified in
18 the Draft Solar PEIS included (1) big game species: cougar (*Puma concolor*), elk (*Cervus*
19 *canadensis*), mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*);
20 (2) furbearers and small game species: the American badger (*Taxidea taxus*), black-tailed
21 jackrabbit (*Lepus californicus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*, common), desert
22 cottontail (*Sylvilagus audubonii*), gray fox (*Urocyon cinereoargenteus*), kit fox (*Vulpes*
23 *macrotis*), and red fox (*Vulpes vulpes*); and (3) small nongame species: Botta's pocket gopher
24 (*Thomomys bottae*), cactus mouse (*Peromyscus eremicus*), canyon mouse (*P. crinitis*), deer
25 mouse (*P. maniculatus*), desert shrew (*Notiosorex crawfordi*), desert woodrat (*Neotoma lepida*),
26 little pocket mouse (*Perognathus longimembris*), long-tailed pocket mouse (*Chaetodipus*
27 *formosus*), Merriam's pocket mouse (*Dipodomys merriami*), northern grasshopper mouse
28 (*Onychomys leucogaster*), southern grasshopper mouse (*O. torridus*), western harvest mouse
29 (*Reithrodontomys megalotis*), and white-tailed antelope squirrel (*Ammospermophilus leucurus*).
30 Bat species that may occur within the area of the SEZ include the big brown bat (*Eptesicus*
31 *fuscus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), California myotis (*Myotis californicus*),
32 hoary bat (*Lasiurus cinereus*), long-legged myotis (*M. volans*), silver-haired bat (*Lasionycteris*
33 *noctivagans*), and western pipistrelle (*Parastrellus hesperus*). The reduction in the size of the
34 Dry Lake Valley North SEZ does not alter the potential for these species or any additional
35 mammal species to occur in the affected area.
36
37

38 ***11.4.11.3.2 Impacts***

39

40 As presented in the Draft Solar PEIS, solar energy development within the Dry Lake
41 Valley North SEZ could affect potentially suitable habitats of mammal species. The analysis
42 presented in the Draft Solar PEIS based on the original Dry Lake Valley North SEZ boundaries
43 indicated that development would result in a small impact on elk, pronghorn, bobcat, red fox,
44 cactus mouse, canyon mouse, hoary bat, and northern grasshopper mouse; and a moderate impact
45 on the remainder of the representative mammal species analyzed (Table 11.4.11.3-1 in the Draft
46 Solar PEIS). On the basis of mapped activity areas, up to 61,499 acres (248.9 km²) of year-round

1 pronghorn habitat would be directly affected by solar energy development within the SEZ
2 (Figure 11.4.11.3-3 of the Draft Solar PEIS). This is about 3.2% of the year-round habitat
3 mapped within the SEZ region and would be considered a moderate impact. Because of the
4 reduction in size of the Dry Lake Valley North SEZ, only 20,055 acres (81.2 km²) of year-round
5 habitat would be affected. This is about 1.0% of the year-round habitat mapped within the SEZ
6 region and would be considered a small impact. The reduction in the developable area of the Dry
7 Lake Valley North SEZ would result in reduced habitat impacts for all representative mammal
8 species. Resultant impact levels for most of the representative mammal species would be small
9 except for the desert shrew and southern grasshopper mouse, for which impact levels would
10 remain moderate.

11.4.11.3.3 *SEZ-Specific Design Features and Design Feature Effectiveness*

15 Required programmatic design features that would reduce impacts on mammals are
16 described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of
17 required programmatic design features and the applicable SEZ-specific design features, impacts
18 on mammal species will be reduced.

19
20 Because of the change in boundaries of the SEZ, one of the SEZ-specific design features
21 identified in Section 11.4.11.3.3 of the Draft Solar PEIS (i.e., playa and wash habitats should be
22 avoided) is no longer applicable. On the basis of impact analyses conducted for the Draft Solar
23 PEIS, updates to those analyses due to changes to the SEZ boundaries, and consideration of
24 comments received as applicable, the following SEZ-specific design feature for mammals has
25 been identified:

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

29
30 If SEZ-specific design features are implemented in addition to required programmatic
31 design features, impacts on mammal species would be small. The need for additional SEZ-
32 specific design features will be identified through the process of preparing parcels for
33 competitive offer and subsequent project-specific analysis.

11.4.11.4 **Aquatic Biota**

11.4.11.4.1 *Affected Environment*

41 There are no perennial surface water bodies or perennial streams within the proposed Dry
42 Lake Valley North SEZ or within the assumed road corridor. The boundaries of the Dry Lake
43 Valley North SEZ have been reduced compared to the boundaries given in the Draft Solar PEIS.
44 On the basis of these changes, updates to the Draft Solar PEIS include:
45

- 1 • 6 mi (10 km) of the intermittent/ephemeral Coyote Wash and 2 mi (3 km) of
2 unnamed washes cross through the SEZ.
- 3
- 4 • 938 acres (4 km²) of an unnamed dry lake is present within the SEZ.
- 5
- 6 • 3,477 acres (14 km²) of dry lake and 18 mi (29 km) of intermittent washes are
7 located within the area of SEZ indirect effects within 5-mi (8 km) of the SEZ.
- 8
- 9 • Outside of the potential indirect effects area, but within 50 mi (80 km) of the
10 SEZ, are 146 mi (235 km) of perennial stream and 403 mi (649 km) of
11 intermittent streams.
- 12

13 Aquatic biota present in the surface water features in the SEZ have not been
14 characterized. As stated in Appendix C of the Supplement to the Draft Solar PEIS, site surveys
15 can be conducted at the project-specific level to characterize the aquatic biota, if present, in
16 washes, dry lakes, and wetlands within the SEZ.

17

18

19 ***11.4.11.4.2 Impacts***

20

21 The types of impacts on aquatic habitats and biota that could occur from the development
22 of utility-scale solar energy facilities are discussed in Section 5.10.3 of the Draft and Final Solar
23 PEIS. Aquatic habitats could be affected by solar energy development in a number of ways,
24 including (1) direct disturbance, (2) deposition of sediments, (3) changes in water quantity, and
25 (4) degradation of water quality. The impact assessment provided in the Draft Solar PEIS
26 remains valid, with the following updates:

- 27
- 28 • The amount of surface water features within the Dry Lake Valley North SEZ
29 that could potentially be affected by solar energy development is less because
30 the size of the SEZ has been reduced.
- 31
- 32 • The dry lakes and associated wetlands within the Dry Lake Valley North SEZ
33 have been identified as non-development areas; therefore, construction
34 activities would not directly affect these features. However, as described in
35 the Draft Solar PEIS, the wetlands could be affected indirectly by solar
36 development activities within the SEZ.
- 37

38

39 ***11.4.11.4.3 SEZ-Specific Design Features and Design Feature Effectiveness***

40

41 Required programmatic design features that would reduce impacts on aquatic biota are
42 described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific resources and
43 conditions will guide how programmatic design features are applied, for example:
44

- 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*), Pahrnagat 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

1 sensitive species by the Nevada BLM office and include (1) birds: golden eagle, gray vireo
2 (*Vireo vicinior*), loggerhead shrike, and long-eared owl; and (2) mammals: big brown bat,
3 Brazilian free-tailed bat, California myotis, hoary bat, long-legged myotis, silver-haired bat, and
4 western pipistrelle. These additional species are discussed below, along with a re-evaluation of
5 those species determined to have moderate or large impacts in the Draft Solar PEIS.
6
7

8 **Blaine Fishhook Cactus.** The Blaine fishhook cactus is a small cactus endemic to
9 southeastern Nevada and southwestern Utah, where it occurs on alkaline substrates and volcanic
10 gravels in valley bottoms. This species was analyzed for the Dry Lake Valley North SEZ in the
11 Draft Solar PEIS. Only three occurrences of this species are currently known. One of these
12 occurrences is in the Dry Lake Valley (Stout 2009). Potentially suitable habitat for this
13 species occurs on the Dry Lake Valley North SEZ and in other portions of the affected area
14 (Table 11.4.12.1-1).
15
16

17 **Eastwood Milkweed.** The Eastwood milkweed is a perennial forb endemic to Nevada
18 from public and private lands in Esmeralda, Lander, Lincoln, and Nye Counties. This species
19 was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. It occurs in open
20 areas on a wide variety of basic (pH usually >8) soils, including calcareous clay knolls, sand,
21 carbonate or basaltic gravels, washes, or shale outcrops at elevations between 4,700 and 7,100 ft
22 (1,430 and 2,150 m). The species is known to occur on the SEZ. Potentially suitable habitat for
23 this species occurs on the Dry Lake Valley North SEZ, assumed access road corridor, and other
24 portions of the affected area (Table 11.4.12.1-1).
25
26

27 **Long-Calyx Milkvetch.** The long-calyx milkvetch is a perennial forb regionally endemic
28 to the Great Basin in southwestern Utah and eastern Nevada. This species was analyzed for the
29 Dry Lake Valley North SEZ in the Draft Solar PEIS. It occurs in pinyon-juniper woodlands,
30 sagebrush, and mixed shrub communities at elevations between 5,800 and 7,500 ft (1,760 and
31 2,290 m). The species is known to occur 8 mi (13 km) east of the SEZ. Potentially suitable
32 habitat for this species occurs on the Dry Lake Valley North SEZ, assumed access road corridor,
33 and other portions of the affected area (Table 11.4.12.1-1).
34
35

36 **Needle Mountains Milkvetch.** The Needle Mountains milkvetch is a perennial forb that
37 occurs on gravel washes and sandy soils in alkaline desert and arid grasslands at elevations
38 between 4,250 and 6,250 ft (1,295 and 1,900 m). This species was analyzed for the Dry Lake
39 Valley North SEZ in the Draft Solar PEIS. The species is known to occur about 15 mi (24 km)
40 southeast of the SEZ. Potentially suitable habitat for this species occurs on the Dry Lake Valley
41 North SEZ and other portions of the affected area (Table 11.4.12.1-1).
42
43

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

1 **TABLE 11.4.12.1-1 Habitats, Potential Impacts, and Potential Mitigation for Special Status Species That Could Be Affected by Solar**
 2 **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	<i>Sclerocactus blaneii</i>	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	
<i>Plants (Cont.)</i>							
Eastwood milkweed	<i>Asclepias eastwoodiana</i>	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	<i>Astragalus oophorus</i> var. <i>lonchocalyx</i>	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	<i>Astragalus eurylobus</i>	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	<i>Mentzelia argillicola</i>	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	<i>Mentzelia tiehmii</i>	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	<i>Aquila chrysaetos</i>	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	<i>Vireo vicinior</i>	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	<i>Lanius ludovicianus</i>	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	<i>Asio otus</i>	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	<i>Falco mexicanus</i>	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	<i>Athene cunicularia hypugaea</i>	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	<i>Charadrius alexandrinus nivosus</i>	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	<i>Eptesicus fuscus</i>	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	<i>Tadarida brasiliensis</i>	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	<i>Myotis californicus</i>	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	
<i>Mammals (Cont.)</i>							
Desert Valley kangaroo mouse	<i>Microdipodops megacephalus albiventer</i>	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	<i>Myotis thysanodes</i>	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	<i>Lasiurus cinereus</i>	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	<i>Myotis volans</i>	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	<i>Microtus montanus fucosus</i>	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	<i>Lasionycteris noctivagans</i>	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	<i>Euderma maculatum</i>	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	<i>Pipistrellus Hesperus</i>	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	<i>Myotis ciliolabrum</i>	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.)

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- ^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*: $\leq 1\%$ 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 $\leq 10\%$ 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 km², multiply by 0.004047
- ^m To convert mi to km, multiply by 1.6093.

1 sagebrush (*Artemisia* spp.). Nearest known occurrences are from Patterson Wash, approximately
2 12 mi (19 km) east of the SEZ. Potentially suitable habitat for this species occurs on the Dry
3 Lake Valley North SEZ, assumed access road corridor, and other portions of the affected area
4 (Table 11.4.12.1-1).

5
6
7 **Tiehm Blazingstar.** The Tiehm blazingstar is a perennial forb endemic to Nevada. This
8 species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. It occurs on
9 hilltops, sparsely vegetated white calcareous knolls, and bluffs with other scattered perennial
10 plant species. Nearest recorded occurrences are from the White River, approximately 7 mi
11 (11 km) west of the SEZ. Potentially suitable habitat for this species occurs on the Dry Lake
12 Valley North SEZ, assumed access road corridor, and other portions of the affected area
13 (Table 11.4.12.1-1).

14
15
16 **Golden Eagle.** The golden eagle is an uncommon to common permanent resident in
17 southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft
18 Solar PEIS. The species inhabits rolling foothills, mountain areas, and desert shrublands. It
19 nests on cliff faces and in large trees in open areas. Potentially suitable foraging habitat for this
20 species may occur on the revised area of the SEZ and throughout the area of indirect effects
21 (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
22 suitable nesting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road
23 corridor; however, approximately 300 acres (1.2 km²) of this habitat that may be potentially
24 suitable nesting habitat occurs in the area of indirect effects.

25
26
27 **Gray Vireo.** The gray vireo is an uncommon summer resident in southern Nevada. This
28 species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. The
29 species occurs in arid environments such as pinyon-juniper, chaparral, and desert shrublands. It
30 builds open-cup nests of plant material in forked branches of shrubs or small trees. On the basis
31 of an evaluation of the SWReGAP habitat suitability model for this species, potentially suitable
32 habitat does not occur on the revised area of the SEZ or within the assumed access road corridor;
33 however, potentially suitable breeding and nonbreeding habitat may occur outside the SEZ in the
34 area of indirect effects (Table 11.4.12.1-1).

35
36
37 **Loggerhead Shrike.** The loggerhead shrike is a common winter resident in lowlands and
38 foothills of southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ
39 in the Draft Solar PEIS. The species occurs in open habitats with shrubs, trees, utility lines, or
40 other perches. The highest densities of this species occur in open-canopied foothill forests. On
41 the basis of an evaluation of the SWReGAP habitat suitability model for this species, potentially
42 suitable winter foraging habitat may occur on the revised area of the SEZ, the assumed access
43 road corridor, and the area of indirect effects (Table 11.4.12.1-1).

1 **Long-Eared Owl.** The long-eared owl is an uncommon year-round resident in southern
2 Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar
3 PEIS. The species inhabits desert shrubland environments in proximity to riparian areas such as
4 desert washes. It nests in trees using old nests from other birds or squirrels. Potentially suitable
5 foraging habitat for this species may occur on the revised area of the SEZ, assumed access road
6 corridor, and the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of
7 SWReGAP land cover types, potentially suitable nesting habitat (forests) does not occur on the
8 revised area of the SEZ or assumed access road corridor (Table 11.4.12.1-1).

9
10
11 **Prairie Falcon.** The prairie falcon occurs throughout the western United States. This
12 species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. According
13 to the SWReGAP habitat suitability model for the prairie falcon, it is a year-round resident
14 throughout the Dry Lake Valley North SEZ region. The species occurs in open habitats in
15 mountainous areas, sagebrush-steppe, grasslands, or cultivated areas. Nests are typically
16 constructed in well-sheltered ledges of rocky cliffs and outcrops. This species occurs in Lincoln
17 County, Nevada, and potentially suitable foraging habitat occurs on the SEZ and in other
18 portions of the affected area (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP
19 land cover types, potentially suitable nesting habitat (rocky cliffs and outcrops) does not occur
20 on the revised area of the SEZ or access road corridor; however, approximately 300 acres
21 (1.2 km²) of this habitat that may be potentially suitable nesting habitat occurs in the area of
22 indirect effects.

23
24
25 **Western Burrowing Owl.** According to the SWReGAP habitat suitability model for the
26 western burrowing owl, the species is a summer (breeding) resident of open, dry grasslands and
27 desert habitats in the Dry Lake Valley North SEZ region. This species was analyzed for the Dry
28 Lake Valley North SEZ in the Draft Solar PEIS. The species occurs locally in open areas with
29 sparse vegetation, where it forages in grasslands, shrublands, and open disturbed areas and nests
30 in burrows typically constructed by mammals. The species occurs in Lincoln County, Nevada,
31 and potentially suitable summer breeding habitat is expected to occur in the SEZ and in other
32 portions of the affected area (Table 11.4.12.1-1). Information provided by the Nevada BLM Ely
33 District Office indicates that active nests are known to occur in burrows in the northern portion
34 of the original SEZ configuration. Nest sites (burrows) are likely to occur on the revised area of
35 the SEZ or within the area of indirect effects.

36
37
38 **Western Snowy Plover.** According to the SWReGAP habitat suitability model, the
39 western snowy plover is a summer (breeding) resident throughout the Dry Lake Valley North
40 SEZ region. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar
41 PEIS. This species breeds on alkali flats around reservoirs and sandy shorelines. The species is
42 known to occur at Adams-McGill Reservoir, approximately 23 mi (37 km) northwest of the SEZ
43 (Table 11.4.12.1-1). Suitable breeding habitat is expected to occur on the revised area of the SEZ
44 and in portions of the affected area, particularly associated with the playa habitat along the
45 southwestern border of the SEZ and in the area of indirect effects.

1 **Big Brown Bat.** The big brown bat is a fairly common year-round resident in southern
2 Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar
3 PEIS. The big brown bat is uncommon in desert habitats but may occur in desert shrublands that
4 are in close proximity to water sources. The species inhabits desert shrubland environments in
5 proximity to riparian areas such as desert washes. It roosts in buildings, caves, mines, and trees.
6 Potentially suitable foraging habitat for this species may occur in the revised area of the SEZ and
7 throughout the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of
8 SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops)
9 does not occur in the revised area of the SEZ or access road corridor; however, approximately
10 300 acres (1.2 km²) of cliffs and rock outcrops that may be potentially suitable nesting habitat
11 occurs in the area of indirect effects.
12
13

14 **California Myotis.** The California myotis is a fairly common year-round resident in
15 southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft
16 Solar PEIS. The species inhabits desert, chaparral, woodlands, and forests. It roosts primarily in
17 crevices but also uses buildings, mines, and hollow trees. Potentially suitable foraging habitat for
18 this species may occur in the revised area of the SEZ and throughout the area of indirect effects
19 (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
20 suitable roosting habitat (forests and rock outcrops) does not occur in the revised area of the SEZ
21 or access road corridor; however, approximately 300 acres (1.2 km²) of cliffs and rock outcrops
22 that may be potentially suitable nesting habitat occurs in the area of indirect effects.
23
24

25 **Hoary Bat.** The hoary bat is a fairly common year-round resident in southern Nevada.
26 This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS. The
27 species inhabits woodlands, foothills, desert shrublands, and chaparral. It roosts primarily in
28 trees. Potentially suitable foraging habitat for this species may occur in the revised area of the
29 SEZ and throughout the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation
30 of SWReGAP land cover types, potentially suitable roosting habitat (forests) does not occur in
31 the revised area of the SEZ, the assumed access road corridor, or area of indirect effects
32 (Table 11.4.12.1-1).
33
34

35 **Long-Legged Myotis.** The long-legged myotis is a common to uncommon year-round
36 resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ
37 in the Draft Solar PEIS. This species is uncommon in desert and arid grassland environments and
38 most common in woodlands above 4,000-ft (1,219-m) elevation. It forages in chaparral, scrub,
39 woodlands, and desert shrublands and roosts in trees, caves, and crevices. Potentially suitable
40 foraging habitat for this species may occur in the revised area of the SEZ and throughout the area
41 of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover
42 types, potentially suitable roosting habitat (forests and rock outcrops) does not occur in the
43 revised area of the SEZ or access road corridor; however, approximately 300 acres (1.2 km²) of
44 cliffs and rock outcrops that may be potentially suitable nesting habitat occurs in the area of
45 indirect effects.
46

1 **Western Pipistrelle.** The western pipistrelle is a common year-round resident in southern
2 Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar
3 PEIS. The species inhabits mountain foothill woodlands, desert shrublands, desert washes, and
4 pinyon-juniper woodlands. It roosts primarily in rock crevices and occasionally in mines and
5 caves. Potentially suitable foraging habitat for this species may occur in the revised area of the
6 SEZ and throughout the area of indirect effects (Table 11.4.12.1-1). On the basis of an evaluation
7 of SWReGAP land cover types, potentially suitable roosting habitat (rock outcrops) does not
8 occur in the revised area of SEZ or access road corridor; however, approximately 300 acres
9 (1.2 km²) of cliffs and rock outcrops that may be potentially suitable nesting habitat occurs in the
10 area of indirect effects.
11
12

13 **11.4.12.2 Impacts**

14

15 Overall impact magnitude categories were based on professional judgment and include
16 (1) *small*: a relatively small proportion ($\leq 1\%$) of the special status species' habitat within the
17 SEZ region would be lost; (2) *moderate*: an intermediate proportion (>1 but $\leq 10\%$) of the special
18 status species' habitat would be lost; and (3) *large*: $>10\%$ of the special status species' habitat
19 would be lost.
20

21 As presented in the Draft Solar PEIS, solar energy development within the Dry Lake
22 Valley North SEZ could affect potentially suitable habitats of special status species. The analysis
23 presented in the Draft Solar PEIS for the original Dry Lake Valley North SEZ developable area
24 indicated that development would result in no impact or a small overall impact on most special
25 status species (Table 11.4.12.1-1 in the Draft Solar PEIS). However, development was
26 determined to result in moderate or large impacts on some special status species. Development
27 within the revised area of the SEZ could still affect the same 22 species evaluated in the Draft
28 Solar PEIS. However, the reduction in the SEZ boundaries and the developable area of the Dry
29 Lake Valley North SEZ would result in reduced impact levels compared to original estimates in
30 the Draft Solar PEIS. Those 13 species that were determined to have moderate or large impacts
31 in the Draft Solar PEIS are discussed below. Impacts on species that were determined to have
32 small overall impacts in the Draft Solar PEIS are not discussed, because impacts on these species
33 using revised SEZ footprints are expected to remain small.
34

35 In addition, impacts on the 11 BLM-designated sensitive species that were not evaluated
36 for the Dry Lake Valley North SEZ in the Draft Solar PEIS are discussed below and in
37 Table 11.4.12.1-1. The impact assessment for these additional species was carried out in the
38 same way as for those species analyzed in the Draft Solar PEIS (Section 11.4.12.2 of the Draft
39 Solar PEIS).
40
41

42 **Blaine Fishhook Cactus.** The Blaine fishhook cactus is known to occur in the Dry Lake
43 Valley. Approximately 132 acres (0.5 km²) of potentially suitable habitat in the revised area of
44 the Dry Lake Valley North SEZ could be directly affected by construction and operations
45 (Table 11.4.12.1-1). This direct effects area represents about 0.7% of potentially suitable habitat
46 in the SEZ region. About 3,500 acres (14 km²) of potentially suitable habitat occurs in the area

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

3
4 The overall impact on the Blaine fishhook cactus from construction, operation, and
5 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
6 Valley North SEZ is considered small, because the amount of potentially suitable habitat for this
7 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
8 SEZ region.

9
10 Avoiding or minimizing disturbance to all playa habitat in the revised area of the SEZ
11 may be sufficient to reduce impacts on the Blaine fishhook cactus to small or negligible levels.
12 For this species and other special status plants, impacts could be reduced by conducting
13 pre-disturbance surveys and avoiding or minimizing disturbance to occupied habitats in the
14 revised area of the SEZ. If avoidance or minimization is not a feasible option, plants could be
15 translocated from areas of direct effects to protected areas that would not be affected directly or
16 indirectly by future development. Alternatively or in combination with translocation, a
17 compensatory plan could be developed and implemented to mitigate direct effects on occupied
18 habitats. The plan could involve the protection and enhancement of existing occupied or suitable
19 habitats to compensate for habitats lost to development. A comprehensive mitigation strategy
20 that uses one or more of these options could be designed to completely offset the impacts of
21 development.

22
23
24 **Eastwood Milkweed.** The Eastwood milkweed is known to occur in the Dry Lake
25 Valley. Approximately 1,865 acres (7.5 km²) of potentially suitable habitat in the revised area
26 of the Dry Lake Valley North SEZ and 5 acres (<0.1 km²) of potentially suitable habitat in
27 the road corridor could be directly affected by construction and operations (Table 11.4.12.1-1).
28 This direct effects area represents about 0.5% of potentially suitable habitat in the SEZ region.
29 About 27,800 acres (112 km²) of potentially suitable habitat occurs in the area of indirect
30 effects; this area represents about 6.7% of the potentially suitable habitat in the SEZ region
31 (Table 11.4.12.1-1).

32
33 The overall impact on the Eastwood milkweed from construction, operation, and
34 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
35 Valley North SEZ is considered small, because the amount of potentially suitable habitat for this
36 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
37 SEZ region.

38
39 Avoidance of all potentially suitable habitats is not a feasible way to mitigate impacts on
40 the Eastwood milkweed, because potentially suitable sagebrush and mixed shrubland habitat is
41 widespread throughout the area of direct effects. Impacts could be reduced by conducting
42 pre-disturbance surveys and avoiding or minimizing disturbance to occupied habitats on the
43 SEZ. If avoidance or minimization is not a feasible option, plants could be translocated from
44 areas of direct effects to protected areas that would not be affected directly or indirectly by future
45 development. Alternatively or in combination with translocation, a compensatory plan could be
46 developed and implemented to mitigate direct effects on occupied habitats. The plan could

1 involve the protection and enhancement of existing occupied or suitable habitats to compensate
2 for habitats lost to development. A comprehensive mitigation strategy that uses one or more of
3 these options could be designed to completely offset the impacts of development.
4
5

6 **Long-Calyx Milkvetch.** The long-calyx milkvetch is not known to occur in the affected
7 area of the revised area of the Dry Lake Valley North SEZ; however, approximately 18,000 acres
8 (73 km²) of potentially suitable habitat in the revised area of the SEZ and 40 acres (0.2 km²) of
9 potentially suitable habitat in the road corridor could be directly affected by construction and
10 operations (Table 11.4.12.1-1). This direct effects area represents about 0.4% of potentially
11 suitable habitat in the SEZ region. About 124,000 acres (502 km²) of potentially suitable habitat
12 occurs in the area of indirect effects; this area represents about 2.9% of the potentially suitable
13 habitat in the SEZ region (Table 11.4.12.1-1).
14

15 The overall impact on the long-calyx milkvetch from construction, operation, and
16 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
17 Valley North SEZ is considered small, because the amount of potentially suitable habitat for this
18 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
19 SEZ region.
20

21 Avoidance of all potentially suitable habitats to mitigate impacts on the long-calyx
22 milkvetch is not feasible, because potentially suitable shrubland habitat is widespread throughout
23 the area of direct effects. However, impacts could be reduced with the implementation of
24 programmatic design features and the mitigation options described previously for the Eastwood
25 milkweed. The need for mitigation, other than programmatic design features, should be
26 determined by conducting pre-disturbance surveys for the species and its habitat on the SEZ.
27
28

29 **Needle Mountains Milkvetch.** The Needle Mountains milkvetch is not known to
30 occur in the affected area of the revised area of the Dry Lake Valley North SEZ; however,
31 approximately 500 acres (2 km²) of potentially suitable habitat in the revised area of the SEZ
32 could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects
33 area represents about 1.2% of potentially suitable habitat in the SEZ region. About 7,250 acres
34 (29 km²) of potentially suitable habitat occurs in the area of indirect effects; this area represents
35 about 17.2% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).
36

37 The overall impact on the Needle Mountains milkvetch from construction, operation, and
38 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
39 Valley North SEZ is considered small, because the amount of potentially suitable habitat for this
40 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
41 SEZ region.
42

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

1 milkweed. The need for mitigation, other than programmatic design features, should be
2 determined by conducting pre-disturbance surveys for the species and its habitat on the SEZ.
3
4

5 **Pioche Blazingstar.** The Pioche blazingstar is not known to occur in the affected area
6 of the revised area of the Dry Lake Valley North SEZ; however, approximately 20,000 acres
7 (81 km²) of potentially suitable habitat on the SEZ and 46 acres (0.2 km²) of potentially
8 suitable habitat in the road corridor could be directly affected by construction and operations
9 (Table 11.4.12.1-1). This direct effects area represents about 0.7% of potentially suitable habitat
10 in the SEZ region. About 146,250 acres (592 km²) of potentially suitable habitat occurs in the
11 area of indirect effects; this area represents about 5.1% of the potentially suitable habitat in the
12 SEZ region (Table 11.4.12.1-1).
13

14 The overall impact on the Pioche blazingstar from construction, operation, and
15 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
16 Valley North SEZ is considered small, because the amount of potentially suitable habitat for this
17 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
18 revised area of the SEZ region.
19

20 Avoidance of all potentially suitable habitats to mitigate impacts on the Pioche
21 blazingstar is not feasible, because potentially suitable shrubland habitat is widespread
22 throughout the area of direct effects. However, impacts could be reduced with the
23 implementation of programmatic design features and the mitigation options described previously
24 for the Eastwood milkweed. The need for mitigation, other than programmatic design features,
25 should be determined by conducting pre-disturbance surveys for the species and its habitat on the
26 SEZ.
27
28

29 **Tiehm Blazingstar.** The Tiehm blazingstar is not known to occur in the affected area
30 of the revised area of the Dry Lake Valley North SEZ; however, approximately 20,000 acres
31 (81 km²) of potentially suitable habitat in the SEZ and 40 acres (0.2 km²) of potentially
32 suitable habitat in the road corridor could be directly affected by construction and operations
33 (Table 11.4.12.1-1). This direct effects area represents about 0.9% of potentially suitable habitat
34 in the SEZ region. About 120,000 acres (486 km²) of potentially suitable habitat occurs in the
35 area of indirect effects; this area represents about 5.2% of the potentially suitable habitat in the
36 SEZ region (Table 11.4.12.1-1).
37

38 The overall impact on the Tiehm blazingstar from construction, operation, and
39 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
40 Valley North SEZ is considered small, because the amount of potentially suitable habitat for this
41 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
42 SEZ region.
43

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

1 implementation of programmatic design features and the mitigation options described
2 previously for the Eastwood milkweed. The need for mitigation, other than programmatic
3 design features, should be determined by conducting pre-disturbance surveys for the species
4 and its habitat on the SEZ.
5
6

7 **Golden Eagle.** The golden eagle was not analyzed for the Dry Lake Valley North SEZ in
8 the Draft Solar PEIS. This species is an uncommon to common permanent resident in southern
9 Nevada, and potentially suitable foraging habitat is expected to occur in the affected area of the
10 revised area of the Dry Lake Valley North SEZ. Approximately 24,890 acres (100 km²) of
11 potentially suitable foraging habitat in the revised area of the SEZ and 60 acres (0.2 km²) of
12 potentially suitable foraging habitat in the access road corridor could be directly affected by
13 construction and operations (Table 11.4.12.1-1). This direct impact area represents 0.5% of
14 potentially suitable habitat in the SEZ region. About 143,800 acres (582 km²) of potentially
15 suitable habitat occurs in the area of indirect effects; this area represents about 2.9% of the
16 available suitable habitat in the SEZ region (Table 11.4.12.1-1). Most of this area could serve as
17 foraging habitat (open shrublands). On the basis of an evaluation of SWReGAP land cover types,
18 potentially suitable nesting habitat (rocky cliffs and outcrops) does not occur on the SEZ or
19 access road corridor; however, approximately 300 acres (1.2 km²) of this habitat that may be
20 potentially suitable nesting habitat occurs in the area of indirect effects.
21

22 The overall impact on the golden eagle from construction, operation, and
23 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
24 Valley North SEZ is considered small, because the amount of potentially suitable foraging
25 habitat for this species in the area of direct effects represents less than 1% of potentially suitable
26 foraging habitat in the SEZ region. The implementation of programmatic design features is
27 expected to be sufficient to reduce indirect impacts on this species to negligible levels.
28 Avoidance of direct impacts on all potentially suitable foraging habitat is not a feasible way to
29 mitigate impacts on the golden eagle, because potentially suitable shrubland is widespread
30 throughout the area of direct effects and readily available in other portions of the affected area.
31
32

33 **Gray Vireo.** The gray vireo was not analyzed for the Dry Lake Valley North SEZ in the
34 Draft Solar PEIS. This species is an uncommon summer resident in southern Nevada. The gray
35 vireo is not known to occur in the revised area of the Dry Lake Valley North SEZ, and suitable
36 habitat is not expected to occur within the SEZ or access road corridor; however, on the basis
37 of an evaluation of the SWReGAP habitat suitability model for this species, approximately
38 3,150 acres (13 km²) of potentially suitable breeding and nonbreeding habitat may occur outside
39 the SEZ in the area of indirect effects. This area represents about 0.2% of the potentially suitable
40 foraging habitat in the SEZ region (Table 11.4.12.1-1).
41

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

1 **Loggerhead Shrike.** The loggerhead shrike was not analyzed for the Dry Lake Valley
2 North SEZ in the Draft Solar PEIS. This species is a common winter resident in lowlands and
3 foothills of southern Nevada. Approximately 24,900 acres (100 km²) of potentially suitable
4 foraging habitat in the revised area of the SEZ and 60 acres (0.2 km²) of potentially suitable
5 foraging habitat in the access road corridor could be directly affected by construction and
6 operations (Table 11.4.12.1-1). This direct effects area represents 0.5% of potentially suitable
7 habitat in the SEZ region. About 140,000 acres (567 km²) of potentially suitable winter foraging
8 habitat occurs in the area of indirect effects; this area represents about 2.8% of the available
9 suitable habitat in the SEZ region (Table 11.4.12.1-1).

10
11 The overall impact on the loggerhead shrike from construction, operation, and
12 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
13 Valley North SEZ is considered small, because the amount of potentially suitable foraging
14 habitat for this species in the area of direct effects represents less than 1% of potentially suitable
15 foraging habitat in the SEZ region. The implementation of programmatic design features is
16 expected to be sufficient to reduce indirect impacts on this species to negligible levels.
17 Avoidance of direct impacts on all potentially suitable foraging habitat is not a feasible way to
18 mitigate impacts on the loggerhead shrike, because potentially suitable shrubland is widespread
19 throughout the area of direct effects and readily available in other portions of the affected area.
20

21
22 **Long-Eared Owl.** The long-eared owl was not analyzed for the Dry Lake Valley North
23 SEZ in the Draft Solar PEIS. This species is an uncommon to common permanent resident in
24 southern Nevada, and potentially suitable foraging habitat is expected to occur in the affected
25 area of the revised area of the Dry Lake Valley North SEZ. Approximately 24,890 acres
26 (101 km²) of potentially suitable foraging habitat in the revised area of the SEZ and 60 acres
27 (0.2 km²) of potentially suitable foraging habitat in the access road corridor could be directly
28 affected by construction and operations (Table 11.4.12.1-1). This direct effects area represents
29 0.5% of potentially suitable habitat in the SEZ region. About 149,450 acres (605 km²) of
30 potentially suitable foraging habitat occurs in the area of indirect effects; this area represents
31 about 3.1% of the available suitable foraging habitat in the SEZ region (Table 11.4.12.1-1).
32

33 The overall impact on the long-eared owl from construction, operation, and
34 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
35 Valley North SEZ is considered small, because the amount of potentially suitable foraging
36 habitat for this species in the area of direct effects represents less than 1% of potentially suitable
37 foraging habitat in the SEZ region. The implementation of programmatic design features is
38 expected to be sufficient to reduce indirect impacts on this species to negligible levels.
39 Avoidance of direct impacts on all potentially suitable foraging habitat is not a feasible way to
40 mitigate impacts on the long-eared owl, because potentially suitable shrubland is widespread
41 throughout the area of direct effects and readily available in other portions of the affected area.
42

43
44 **Prairie Falcon.** The prairie falcon is a year-round resident in the Dry Lake Valley North
45 SEZ region, and potentially suitable foraging habitat is expected to occur in the affected area of
46 the revised area of the SEZ. Approximately 24,000 acres (97 km²) of potentially suitable habitat

1 within the SEZ and 30 acres (0.1 km²) of potentially suitable habitat in the road corridor could
2 be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area
3 represents 1.4% of potentially suitable habitat in the SEZ region. About 140,000 acres (567 km²)
4 of potentially suitable habitat occurs in the area of indirect effects; this area represents about
5 8.2% of the potentially suitable habitat in the SEZ region (Table 11.4.12.1-1). Most of this area
6 could serve as foraging habitat (open shrublands). On the basis of an evaluation of SWReGAP
7 land cover types, potentially suitable nesting habitat (rocky cliffs and outcrops) does not occur
8 on the SEZ or access road corridor; however, approximately 300 acres (1.2 km²) of this habitat
9 that may be potentially suitable nesting habitat occurs in the area of indirect effects.

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

20
21
22 **Western Burrowing Owl.** The western burrowing owl is considered a summer breeding
23 resident within the revised area of the Dry Lake Valley North SEZ region, and potentially
24 suitable foraging habitat is expected to occur in the affected area. Approximately 24,600 acres
25 (100 km²) of potentially suitable habitat in the revised area of the SEZ and 50 acres (0.2 km²) of
26 potentially suitable habitat in the road corridor could be directly affected by construction and
27 operations (Table 1.4.12.1-1). This direct effects area represents 0.8% of potentially suitable
28 habitat in the SEZ region. About 145,000 acres (587 km²) of potentially suitable habitat occurs
29 in the area of indirect effects; this area represents about 4.6% of the potentially suitable habitat in
30 the SEZ region (Table 11.4.12.1-1). Most of this area could serve as foraging and nesting habitat
31 (shrublands). Information provided by the Nevada BLM Ely District Office indicates that active
32 nests are known to occur in burrows in the northern portion of the original SEZ configuration.
33 Nest sites (burrows) are likely to occur in the revised area of the SEZ or within the area of
34 indirect effects.

35
36 The overall impact on the western burrowing owl from construction, operation, and
37 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
38 Valley North SEZ is considered small, because the amount of potentially suitable foraging and
39 nesting habitat for this species in the area of direct effects represents less than 1% of potentially
40 suitable foraging and nesting habitat in the region. The implementation of programmatic design
41 features is expected to be sufficient to reduce indirect impacts on this species.

42
43 Avoidance of all potentially suitable habitats is not a feasible way to mitigate impacts
44 on the western burrowing owl, because potentially suitable shrubland habitats are widespread
45 throughout the area of direct effects and readily available in other portions of the SEZ region.
46 Impacts on the western burrowing owl could be reduced by implementing programmatic

1 design features, conducting pre-disturbance surveys, and avoiding or minimizing disturbance
2 to occupied burrows on the SEZ. If avoidance or minimization is not a feasible option, a
3 compensatory plan could be developed and implemented to mitigate direct effects. The plan
4 could involve the protection and enhancement of existing occupied or suitable habitats to
5 compensate for habitats lost to development. A comprehensive mitigation strategy that uses one
6 or both of these options could be designed to completely offset the impacts of development. The
7 need for mitigation, other than programmatic design features, should be determined by
8 conducting pre-disturbance surveys for the species and its habitat on the SEZ.
9

10
11 **Western Snowy Plover.** The western snowy plover is considered a summer breeding
12 resident within the Dry Lake Valley North SEZ region, and potentially suitable foraging habitat
13 is expected to occur in the affected area. Approximately 250 acres (1 km²) of potentially suitable
14 habitat in the revised area of the SEZ could be directly affected by construction and operations
15 (Table 11.4.12.1-1). This direct effects area represents 0.4% of potentially suitable habitat in the
16 SEZ region. About 5,000 acres (20 km²) of potentially suitable habitat occurs in the area of
17 indirect effects; this area represents about 7.5% of the potentially suitable habitat in the SEZ
18 region (Table 11.4.12.1-1). Most of this area could serve as foraging and nesting habitat in
19 and along playa margins. On the basis of an evaluation of SWReGAP land cover types,
20 approximately 165 acres (1 km²) of playa habitat exists on the SEZ that may be potentially
21 suitable nesting or foraging habitat for this species.
22

23 The overall impact on the western snowy plover from construction, operation, and
24 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
25 Valley North SEZ is considered small, because the amount of potentially suitable foraging and
26 nesting habitat for this species in the area of direct effects represents less than 1% of potentially
27 suitable foraging and nesting habitat in the region.
28

29 Impacts on the western snowy plover could be reduced by implementing programmatic
30 design features, conducting pre-disturbance surveys, and avoiding or minimizing disturbance to
31 all playa habitats and other occupied habitats in the revised area of the SEZ. If avoidance or
32 minimization of playas and all occupied habitats is not a feasible option, a compensatory plan
33 could be developed and implemented to mitigate direct effects. The plan could involve the
34 protection and enhancement of existing occupied or suitable habitats to compensate for habitats
35 lost to development. A comprehensive mitigation strategy that uses one or both of these options
36 could be designed to completely offset the impacts of development. The need for mitigation,
37 other than programmatic design features, should be determined by conducting pre-disturbance
38 surveys for the species and its habitat on the SEZ.
39

40
41 **Big Brown Bat.** The big brown bat is a fairly common year-round resident in southern
42 Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar
43 PEIS. Suitable roosting habitats (caves, forests, and buildings) are not expected to occur in the
44 revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect
45 effects has not been determined. Approximately 24,840 acres (101 km²) and 50 acres (0.2 km²)
46 of potentially suitable foraging habitat within the revised area of the SEZ and access road

1 corridor, respectively, could be directly affected by construction and operations
2 (Table 11.4.12.1-1). This direct effects area represents about 0.9% of potentially suitable
3 foraging habitat in the region. About 89,200 acres (361 km²) of potentially suitable foraging
4 habitat occurs in the area of indirect effects; this area represents about 3.3% of the available
5 suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an evaluation of
6 SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops)
7 does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km²)
8 of this habitat that may be potentially suitable roosting habitat occurs in the area of indirect
9 effects.

10
11 The overall impact on the big brown bat from construction, operation, and
12 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
13 Valley North SEZ is considered small, because the amount of potentially suitable habitat for this
14 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
15 region. The implementation of programmatic design features is expected to be sufficient to
16 reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable
17 foraging habitat is not a feasible way to mitigate impacts on the big brown bat, because
18 potentially suitable foraging habitat is widespread throughout the area of direct effects and is
19 readily available in other portions of the SEZ region.

20
21
22 **Brazilian Free-Tailed Bat.** The Brazilian free-tailed bat is a fairly common year-round
23 resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ
24 in the Draft Solar PEIS. Suitable roosting habitats (caves, forests, and buildings) are not expected
25 to occur on the SEZ, but the availability of suitable roosting sites in the area of indirect effects
26 has not been determined. Approximately 25,050 acres (101 km²) and 53 acres (0.2 km²) of
27 potentially suitable foraging habitat in the revised area of the SEZ and access road corridor,
28 respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This
29 direct effects area represents about 0.6% of potentially suitable foraging habitat in the region.
30 About 120,000 acres (485 km²) of potentially suitable foraging habitat occurs in the area of
31 indirect effects; this area represents about 2.9% of the available suitable foraging habitat in the
32 region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types,
33 potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur in the revised area
34 of the SEZ or access road corridor; however, approximately 300 acres (1.2 km²) of this habitat
35 that may be potentially suitable roosting habitat occurs in the area of indirect effects.

36
37 The overall impact on the Brazilian free-tailed bat from construction, operation, and
38 decommissioning of utility-scale solar energy facilities within the revised Dry Lake Valley North
39 SEZ is considered small, because the amount of potentially suitable habitat for this species in the
40 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
41 implementation of programmatic design features is expected to be sufficient to reduce indirect
42 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
43 is not a feasible way to mitigate impacts on the Brazilian free-tailed bat, because potentially
44 suitable foraging habitat is widespread throughout the area of direct effects and is readily
45 available in other portions of the SEZ region.

1 **California Myotis.** The California myotis is a fairly common year-round resident in
2 southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft
3 Solar PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to occur in the
4 revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect
5 effects has not been determined. Approximately 25,050 acres (101 km²) and 53 acres (0.2 km²)
6 of potentially suitable foraging habitat on the revised area of the SEZ and access road corridor,
7 respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This
8 direct effects area represents about 1.0% of potentially suitable foraging habitat in the region.
9 About 117,000 acres (473 km²) of potentially suitable foraging habitat occurs in the area of
10 indirect effects; this area represents about 4.6% of the available suitable foraging habitat in the
11 region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types,
12 potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or
13 access road corridor; however, approximately 300 acres (1.2 km²) of this habitat that may be
14 potentially suitable roosting habitat occurs in the area of indirect effects.
15

16 The overall impact on the California myotis from construction, operation, and
17 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
18 Valley North SEZ is considered moderate, because the amount of potentially suitable foraging
19 habitat for this species in the area of direct effects represents greater than or equal to 1% but less
20 than 10% of potentially suitable habitat in the SEZ region. The implementation of programmatic
21 design features may be sufficient to reduce indirect impacts on this species. However, avoidance
22 of all potentially suitable foraging habitats to mitigate impacts on the California myotis is not
23 feasible, because potentially suitable shrubland habitat is widespread throughout the area of
24 direct effect.
25
26

27 **Desert Valley Kangaroo Mouse.** The Desert Valley kangaroo mouse is endemic
28 to Nevada and is known to occur in the revised area of the Dry Lake Valley North SEZ.
29 This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS.
30 Approximately 24,000 acres (97 km²) and 17 acres (0.1 km²) of potentially suitable habitat in
31 the revised area of the SEZ and, access road corridor, respectively, could be directly affected by
32 construction and operations (Table 11.4.12.1-1). This direct effects area represents 1.9% of
33 potentially suitable habitat in the SEZ region. About 60,000 acres (243 km²) of potentially
34 suitable habitat occurs in the area of indirect effects; this area represents about 4.8% of the
35 potentially suitable habitat in the SEZ region (Table 11.4.12.1-1).
36

37 The overall impact on the Desert Valley kangaroo mouse from construction, operation,
38 and decommissioning of utility-scale solar energy facilities within the revised area of the Dry
39 Lake Valley North SEZ is considered moderate, because the amount of potentially suitable
40 habitat for this species in the area of direct effects represents greater than or equal to 1% but less
41 than 10% of potentially suitable habitat in the SEZ region. The implementation of programmatic
42 design features may be sufficient to reduce indirect impacts on this species to negligible levels.
43

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

1 USFWS (Stout 2009), pre-disturbance surveys and avoiding or minimizing disturbance to
2 occupied habitats in the area of direct effects could reduce impacts. If avoidance or minimization
3 is not a feasible option, a compensatory plan could be developed and implemented to mitigate
4 direct effects on occupied habitats. The plan could involve the protection and enhancement
5 of existing occupied or suitable habitats to compensate for habitats lost to development. A
6 comprehensive mitigation strategy that uses one or both of these options could be designed to
7 completely offset the impacts of development.
8
9

10 **Fringed Myotis.** The fringed myotis is a year-round resident within the Dry Lake Valley
11 North SEZ region. Suitable roosting habitats (caves and buildings) are not expected to occur on
12 the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been
13 determined. This species was analyzed for the Dry Lake Valley North SEZ in the Draft Solar
14 PEIS. Approximately 410 acres (2 km²) and 10 acres (<1 km²) of potentially suitable habitat in
15 the revised area of the SEZ and access road corridor, respectively, could be directly affected by
16 construction and operations (Table 11.4.12.1-1). This direct effects area represents about 0.1% of
17 potentially suitable foraging habitat in the region. About 80,000 acres (324 km²) of potentially
18 suitable foraging habitat occurs in the area of indirect effects; this area represents about 2.7% of
19 the available suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an
20 evaluation of SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and
21 outcrops) does not occur on the SEZ or access road corridor; however, approximately 300 acres
22 (1.2 km²) of this potentially suitable roosting habitat occurs in the area of indirect effects.
23

24 The overall impact on the fringed myotis from construction, operation, and
25 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
26 Valley North SEZ is considered small, because the amount of potentially suitable foraging and
27 nesting habitat for this species in the area of direct effects represents less than 1% of potentially
28 suitable habitat in the SEZ region. The implementation of programmatic design features may be
29 sufficient to reduce indirect impacts on this species. However, avoidance of all potentially
30 suitable foraging habitats to mitigate impacts on the fringed myotis is not feasible, because
31 potentially suitable shrubland habitat is widespread throughout the area of direct effects.
32
33

34 **Hoary Bat.** The hoary bat is a fairly common year-round resident in southern Nevada.
35 This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar PEIS.
36 Suitable roosting habitats (forests) are not expected to occur in the revised area of the SEZ, but
37 the availability of suitable roosting sites in the area of indirect effects has not been determined.
38 Approximately 24,000 acres (97 km²) and 45 acres (0.2 km²) of potentially suitable habitat in
39 the revised area of the SEZ and access road corridor, respectively, could be directly affected by
40 construction and operations (Table 11.4.12.1-1). This direct effects area represents about 1.1% of
41 potentially suitable foraging habitat in the region. About 65,000 acres (263 km²) of potentially
42 suitable foraging habitat occurs in the area of indirect effects; this area represents about 3.1% of
43 the available suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an
44 evaluation of SWReGAP land cover types, no suitable roosting habitat (forests) exists within
45 the revised area of the SEZ, access road corridor, or the area of indirect effects.
46

1 The overall impact on the hoary bat from construction, operation, and decommissioning
2 of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North SEZ
3 is considered moderate, because the amount of potentially suitable foraging habitat for this
4 species in the area of direct effects represents greater than or equal to 1% but less than 10% of
5 potentially suitable habitat in the SEZ region. The implementation of programmatic design
6 features may be sufficient to reduce indirect impacts on this species. However, avoidance of all
7 potentially suitable foraging habitats to mitigate impacts on the hoary bat is not feasible, because
8 potentially suitable shrubland habitat is widespread throughout the area of direct effect.
9

10
11 **Long-Legged Myotis.** The long-legged myotis is a common to uncommon year-round
12 resident in southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ
13 in the Draft Solar PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to
14 occur in the revised area of the SEZ, but the availability of suitable roosting sites in the area of
15 indirect effects has not been determined. Approximately 24,850 acres (100 km²) and 51 acres
16 (0.2 km²) of potentially suitable habitat in the revised area of the SEZ and access road corridor,
17 respectively, could be directly affected by construction and operations (Table 11.4.12.1-1). This
18 direct effects area represents about 0.9% of potentially suitable foraging habitat in the region.
19 About 90,000 acres (364 km²) of potentially suitable foraging habitat occurs in the area of
20 indirect effects; this area represents about 3.3% of the available suitable foraging habitat in the
21 region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types,
22 potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or
23 access road corridor; however, approximately 300 acres (1.2 km²) of this potentially suitable
24 roosting habitat occurs in the area of indirect effects.
25

26 The overall impact on the long-legged myotis from construction, operation, and
27 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
28 Valley North SEZ is considered small, because the amount of potentially suitable habitat for this
29 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
30 region. The implementation of programmatic design features is expected to be sufficient to
31 reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable
32 foraging habitat is not a feasible way to mitigate impacts on the long-legged myotis, because
33 potentially suitable foraging habitat is widespread throughout the area of direct effects and is
34 readily available in other portions of the SEZ region.
35
36

37 **Pahranagat Valley Montane Vole.** The Pahranagat Valley montane vole is endemic to
38 Lincoln County, Nevada, near the Pahranagat Creek. This species was analyzed for the Dry Lake
39 Valley North SEZ in the Draft Solar PEIS. The species is not known to occur in the affected area
40 of the revised area of the Dry Lake Valley North SEZ; however, approximately 410 acres
41 (2 km²) of potentially suitable habitat on the SEZ could be directly affected by construction and
42 operations (Table 11.4.12.1-1). This direct effects area represents 1.7% of potentially suitable
43 habitat in the SEZ region. About 6,850 acres (28 km²) of potentially suitable habitat occurs in
44 the area of indirect effects; this area represents about 28.6% of the potentially suitable habitat in
45 the SEZ region (Table 11.4.12.1-1).
46

1 The overall impact on the Pahrangat Valley montane vole from construction, operation,
2 and decommissioning of utility-scale solar energy facilities within the revised area of the Dry
3 Lake Valley North SEZ is considered moderate, because the amount of potentially suitable
4 foraging and nesting habitat for this species in the area of direct effects represents greater
5 than or equal to 1% but less than 10% of potentially suitable habitat in the SEZ region. The
6 implementation of programmatic design features is expected to be sufficient to reduce indirect
7 impacts on this species to negligible levels.
8

9 Avoiding or minimizing disturbance to all mesic habitats in the revised area of the SEZ
10 (e.g., playas) could reduce impacts on this species. In addition, pre-disturbance surveys and
11 avoidance or minimization of disturbance to occupied habitats in the area of direct effects could
12 reduce impacts. If avoidance or minimization is not a feasible option, a compensatory plan could
13 be developed and implemented to mitigate direct effects on occupied habitats. The plan could
14 involve the protection and enhancement of existing occupied or suitable habitats to compensate
15 for habitats lost to development. A comprehensive mitigation strategy that uses one or both of
16 these options could be designed to completely offset the impacts of development.
17
18

19 **Silver-Haired Bat.** The silver-haired bat is an uncommon year-round resident in
20 southern Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft
21 Solar PEIS. Suitable roosting habitats (forests) are not expected to occur on the SEZ or access
22 road corridor, but the availability of suitable roosting sites in the area of indirect effects has not
23 been determined. Approximately 24,200 acres (28 km²) and 53 acres (0.2 km²) of potentially
24 suitable foraging habitat on the revised SEZ and access road corridor, respectively, could be
25 directly affected by construction and operations (Table 11.4.12.1-1). This direct effects area
26 represents about 0.6% of potentially suitable foraging habitat in the region. About 115,000 acres
27 (465 km²) of potentially suitable foraging habitat occurs in the area of indirect effects; this area
28 represents about 2.8% of the available suitable foraging habitat in the region (Table 11.4.12.1-1).
29 On the basis of an evaluation of SWReGAP land cover types, no suitable roosting habitat
30 (forests) exists within the SEZ, access road corridor, or the area of indirect effects.
31

32 The overall impact on the silver-haired bat from construction, operation, and
33 decommissioning of utility-scale solar energy facilities within the revised Dry Lake Valley North
34 SEZ is considered small, because the amount of potentially suitable habitat for this species in the
35 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
36 implementation of programmatic design features is expected to be sufficient to reduce indirect
37 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
38 is not a feasible way to mitigate impacts on the silver-haired bat, because potentially suitable
39 foraging habitat is widespread throughout the area of direct effects and is readily available in
40 other portions of the SEZ region.
41
42

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

1 has not been determined. Approximately 23,000 acres (93 km²) of potentially suitable foraging
2 habitat on the SEZ and 15 acres (0.1 km²) of potentially suitable habitat in the access road
3 corridor could be directly affected by construction and operations (Table 11.4.12.1-1). This
4 direct effects area represents about 0.6% of potentially suitable foraging habitat in the region.
5 About 103,350 acres (418 km²) of potentially suitable foraging habitat occurs in the area of
6 indirect effects; this area represents about 2.6% of the potentially suitable foraging habitat in
7 the region (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types,
8 potentially suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or
9 access road corridor; however, approximately 300 acres (1.2 km²) of this potentially suitable
10 roosting habitat occurs in the area of indirect effects.

11
12 The overall impact on the spotted bat from construction, operation, and decommissioning
13 of utility-scale solar energy facilities within the revised area of the Dry Lake Valley North SEZ
14 is considered small, because the amount of potentially suitable foraging habitat for this species in
15 the area of direct effects represents less than 1% of potentially suitable habitat in the region. The
16 implementation of programmatic design features may be sufficient to reduce indirect impacts on
17 this species. Avoidance of all potentially suitable foraging habitats to mitigate impacts on the
18 spotted bat is not feasible, because potentially suitable shrubland habitat is widespread
19 throughout the area of direct effects and in other portions of the SEZ region.

20
21
22 **Western Pipistrelle.** The western pipistrelle is a common year-round resident in southern
23 Nevada. This species was not analyzed for the Dry Lake Valley North SEZ in the Draft Solar
24 PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to occur in the
25 revised area of the SEZ, but the availability of suitable roosting sites in the area of indirect
26 effects has not been determined. Approximately 25,050 acres (101 km²) and 60 acres (0.2 km²)
27 of potentially suitable foraging habitat on the revised SEZ and access road corridor, respectively,
28 could be directly affected by construction and operations (Table 11.4.12.1-1). This direct effects
29 area represents about 0.3% of potentially suitable foraging habitat in the region. About
30 150,000 acres (607 km²) of potentially suitable foraging habitat occurs in the area of indirect
31 effects; this area represents about 4.1% of the available suitable foraging habitat in the region
32 (Table 11.4.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
33 suitable roosting habitat (rocky cliffs and outcrops) does not occur on the SEZ or access road
34 corridor; however, approximately 300 acres (1.2 km²) of this potentially suitable roosting habitat
35 occurs in the area of indirect effects.

36
37 The overall impact on the western pipistrelle from construction, operation, and
38 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
39 Valley North SEZ is considered small, because the amount of potentially suitable habitat for this
40 species in the area of direct effects represents less than 1% of potentially suitable habitat in the
41 region. The implementation of programmatic design features is expected to be sufficient to
42 reduce indirect impacts on this species to negligible levels. Avoidance of all potentially suitable
43 foraging habitat is not a feasible way to mitigate impacts on the western pipistrelle, because
44 potentially suitable foraging habitat is widespread throughout the area of direct effects and is
45 readily available in other portions of the SEZ region.

1 **Western Small-Footed Bat.** The western small-footed bat is a year-round resident within
2 the Dry Lake Valley North SEZ region. Suitable roosting habitats (caves, rock outcrops, and
3 buildings) are not expected to occur in the revised area of the SEZ, but the availability of suitable
4 roosting sites in the area of indirect effects has not been determined. Approximately 25,000 acres
5 (101 km²) and 40 acres (0.2 km²) of potentially suitable foraging habitat on the revised SEZ and
6 access road corridor, respectively, could be directly affected by construction and operations
7 (Table 11.4.12.1-1). This direct effects area represents about 0.5% of potentially suitable
8 foraging habitat in the region. About 140,000 acres (567 km²) of potentially suitable foraging
9 habitat occurs in the area of indirect effects; this area represents about 2.8% of the potentially
10 suitable foraging habitat in the region (Table 11.4.12.1-1). On the basis of an evaluation of
11 SWReGAP land cover types, potentially suitable roosting habitat (rocky cliffs and outcrops)
12 does not occur on the SEZ or access road corridor; however, approximately 300 acres (1.2 km²)
13 of this potentially suitable roosting habitat occurs in the area of indirect effects.
14

15 The overall impact on the western small-footed bat from construction, operation, and
16 decommissioning of utility-scale solar energy facilities within the revised area of the Dry Lake
17 Valley North SEZ is considered small, because the amount of potentially suitable foraging
18 habitat for this species in the area of direct effects represents less than 1% of potentially suitable
19 habitat in the region. The implementation of programmatic design features may be sufficient to
20 reduce indirect impacts on this species. However, avoidance of all potentially suitable foraging
21 habitats to mitigate impacts on the western small-footed bat is not feasible, because potentially
22 suitable shrubland habitat is widespread throughout the area of direct effects and in other
23 portions of the SEZ region.
24
25

26 **11.4.12.3 SEZ-Specific Design Features and Design Feature Effectiveness** 27

28 Required programmatic design features that would reduce impacts on special status and
29 rare species are described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific
30 resources and conditions will guide how programmatic design features are applied, for example:
31

- 32 • Pre-disturbance surveys shall be conducted within the SEZ and access road
33 corridor (i.e., area of direct effects) to determine the presence and abundance
34 of special status species, including those identified in Table 11.4.12.1-1;
35 disturbance to occupied habitats for these species shall be avoided or
36 minimized to the extent practicable. If avoiding or minimizing impacts on
37 occupied habitats is not possible, translocation of individuals from areas of
38 direct effects or compensatory mitigation of direct effects on occupied habitats
39 may be used to reduce impacts. A comprehensive mitigation strategy for
40 special status species that uses one or more of these options to offset the
41 impacts of development shall be developed in coordination with the
42 appropriate federal and state agencies.
43
- 44 • Avoiding or minimizing disturbance of playa habitat on the SEZ shall be used
45 to reduce or eliminate impacts on the Blaine fishhook cactus, Needle

1 Mountains milkvetch, western snowy plover, Desert Valley kangaroo mouse,
2 and Pahranaagat Valley montane vole.

- 3
- 4 • Consultation with the USFWS shall be conducted to address the potential for
5 impacts (primarily indirect impacts) on the desert tortoise, a species listed as
6 threatened under the ESA. Consultation will identify an appropriate survey
7 protocol, avoidance and minimization measures, and, if appropriate,
8 reasonable and prudent alternatives, reasonable and prudent measures, and
9 terms and conditions for incidental take statements.

10

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

14

15 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
16 analyses due to changes to the SEZ boundaries, and consideration of comments received as
17 applicable, no SEZ-specific design features for special status species have been identified. Some
18 SEZ-specific design features may be identified through the process of preparing parcels for
19 competitive offer and subsequent project-specific analysis. Projects will comply with terms and
20 conditions set forth by the USFWS Biological Opinion resulting from the programmatic
21 consultations and any necessary project-specific ESA Section 7 consultations.

22

23

24 **11.4.13 Air Quality and Climate**

25

26

27 **11.4.13.1 Affected Environment**

28

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

31

32

33 **11.4.13.1.1 Existing Air Emissions**

34

35 The Draft Solar PEIS presented Lincoln County emissions data for 2002. More recent
36 data for 2008 (EPA 2011a) were reviewed for this Final Solar PEIS. The two emissions
37 inventories used different sources and assumptions. For example, the 2008 data did not include
38 biogenic emissions and emissions from fires. In the more recent data, all emissions were lower.
39 These changes would not affect the modeled air quality impacts presented in this update.

40

41

42 **11.4.13.1.2 Air Quality**

43

44 The calendar quarterly average NAAQS of 1.5 $\mu\text{g}/\text{m}^3$ for lead presented in
45 Table 11.4.13.1-2 of the Draft Solar PEIS has been replaced by the rolling 3-month standard
46 (0.15 $\mu\text{g}/\text{m}^3$). The federal 24-hour and annual SO_2 , 1-hour O_3 , and annual PM_{10} standards have
47 been revoked as well (EPA 2011b). These changes do not affect the modeled air quality impacts

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

3 4 5 **11.4.13.2 Impacts**

6 7 8 **11.4.13.2.1 Construction**

9 10 11 **Methods and Assumptions**

12
13 Except for the area disturbed at any one time during construction, the methods and
14 modeling assumptions have not changed substantially from those presented in the Draft Solar
15 PEIS. On the basis of the reduced size of the SEZ, air quality impacts for this Final Solar PEIS
16 were remodeled assuming that two project areas of 3,000 acres (12.14 km²) each and 6,000 acres
17 (24.28 km²) in total, located in the southern portion of the SEZ close to nearby residences, could
18 be disturbed at the same time. The Draft Solar PEIS had assumed that three such project areas of
19 3,000 acres (12.14 km²) each and 9,000 acres (36.42 km²) in total could be disturbed at the same
20 time.

21
22 In the Draft Solar PEIS, concentrations at human receptors were estimated indirectly
23 from contours based on modeled concentrations at gridded receptor locations. In this Final Solar
24 PEIS, concentrations were estimated directly at those receptors.

25 26 27 **Results**

28
29 Potential particulate impacts on air quality from construction were remodeled based on
30 the updated boundaries of the proposed Dry Lake Valley North SEZ.² Changes in magnitude to
31 predicted impacts at the boundary would be expected to be larger than changes at greater
32 distances from the SEZ. Table 11.4.13.2-1 presents the updated maximum modeled
33 concentrations from construction fugitive dust.

34
35 Except for 24-hour PM_{2.5}, overall concentration estimates are less than those predicted
36 in the Draft Solar PEIS, as would be expected given the reduction in the area assumed to be
37 disturbed. The removal of the northern portion and the eastern panhandle of the proposed SEZ
38 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 km²) 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.

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

Pollutant ^a	Averaging Time	Rank ^b	Concentration ($\mu\text{g}/\text{m}^3$)				Percentage of NAAQS/SAAQS	
			Maximum Increment ^b	Background ^c	Total	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 $\leq 2.5 \mu\text{m}$; PM₁₀ = particulate matter with a diameter of $\leq 10 \mu\text{m}$.

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.

3
 4
 5 rearrangement probably accounts for the small increase in the levels of 24-hour PM_{2.5} predicted
 6 for this Final Solar PEIS. Despite this increase, the updated predictions are still consistent with
 7 the conclusion in the Draft Solar PEIS that maximum PM₁₀ levels in the vicinity of the SEZ
 8 could exceed standard levels used for comparison during construction of solar facilities. These
 9 high PM₁₀ concentrations would be limited to the immediate areas surrounding the SEZ
 10 boundaries and would decrease quickly with distance.

11
 12 The reduction in the area assumed to be disturbed for the proposed Dry Lake Valley
 13 North SEZ meant that the nearest towns analyzed for this Final Solar PEIS were different than
 14 the nearest towns analyzed for the Draft Solar PEIS. With one exception, this analysis predicted
 15 smaller concentrations at nearby human receptor locations than were predicted in the Draft Solar
 16 PEIS. Even with this one exception, the conclusions presented in the Draft Solar PEIS remain
 17 valid.

18
 19 Updated 24-hour and annual PM₁₀ concentration increments at both the surrogate
 20 receptors³ for the nearest Class I Area (Zion NP in Utah) and at the National Park itself are lower
 21 than those presented in the Draft Solar PEIS. The conclusion in the Draft Solar PEIS that the
 22 PM₁₀ 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.

1 As stated in the Draft Solar PEIS, predicted 24-hour and annual PM₁₀ concentration
2 levels could exceed the standard levels at the SEZ boundaries and in the immediate surrounding
3 areas during the construction of solar facilities. To reduce potential impacts on ambient air
4 quality and in compliance with programmatic design features, aggressive dust control measures
5 would be used. Potential air quality impacts on nearby communities would be much lower.
6 Modeling indicates that emissions from construction activities are not anticipated to exceed
7 Class I PSD PM₁₀ increments at the nearest federal Class I area (Zion NP in Utah). Construction
8 activities are not subject to the PSD program, and the comparison provides only a screen for
9 gauging the size of the impact. Accordingly, it is anticipated that impacts of construction
10 activities on ambient air quality would be moderate and temporary.

11
12 Considering the reduced size of the SEZ, emissions from construction equipment and
13 vehicles would be less than those estimated in the Draft Solar PEIS. Any potential impacts on
14 AQRVs at nearby federal Class I areas would be less. Thus, as concluded in the Draft, emissions
15 from construction-related equipment and vehicles are temporary and would cause some
16 unavoidable but short-term impacts.

17 18 19 ***11.4.13.2.2 Operations***

20
21 The reduction in the developable area of the proposed Dry Lake Valley North SEZ
22 by about 67% decreases the generation capacity and annual power generation by a similar
23 percentage and thus decreases the potentially avoided emissions presented in the Draft Solar
24 PEIS. Table 11.4.13.2-2 in the Draft Solar PEIS provided estimates for emissions potentially
25 avoided by a solar facility. These estimates were updated by reducing the tabulated emissions
26 by about 67%, as shown in the revised Table 11.4.13.2-2. For example, depending on the
27 technology used, up to 4,725 tons of NO_x per year (= 32.61% × the low-end value of 14,488 tons
28 per year tabulated in the Draft Solar PEIS) could be avoided by full solar development of the
29 revised area of the proposed Dry Lake Valley North SEZ. Although the total emissions avoided
30 by full solar development of the proposed Dry Lake Valley North SEZ are considerably reduced
31 from those presented in the Draft Solar PEIS, the conclusions of the Draft Solar PEIS remain
32 valid; that is, if the proposed Dry Lake Valley North SEZ were fully developed, the emissions
33 avoided could be substantial. Power generation from fossil fuel-fired power plants accounts for
34 about 93% of the total electric power generated in Nevada, of which the contributions from
35 natural gas and coal combustion are comparable (EPA 2009a). Thus, solar facilities to be built in
36 the Dry Lake Valley North SEZ could avoid relatively more fossil fuel emissions than those built
37 in other states that rely less on fossil fuel-generated power.

38 39 40 ***11.4.13.2.3 Decommissioning and Reclamation***

41
42 The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation
43 activities would be of short duration and their potential impacts would be moderate and
44 temporary.

1 **TABLE 11.4.13.2-2 Annual Emissions from Combustion-Related Power Generation Avoided by**
 2 **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 km²) per MW (for parabolic trough technology) to 9 acres (0.036 km²) 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 SO₂, NO_x, Hg, and CO₂ 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 SO₂ and NO_x are for 2002, while those for CO₂ are for 2005.
- ^f A dash indicates not estimated.

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

3
4
5 **11.4.13.3 SEZ-Specific Design Features and Design Feature Effectiveness**
6

7 Required programmatic design features that would reduce air quality impacts are
8 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Limiting dust generation
9 during construction and operations is a required programmatic design feature under BLM’s Solar
10 Energy Program. These extensive fugitive dust control measures would keep off-site PM levels
11 as low as possible during construction.
12

13 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
14 analyses due to changes to the SEZ boundaries, and consideration of comments received as
15 applicable, no SEZ-specific design features for air quality have been identified. Some SEZ-

1 specific design features may be identified through the process of preparing parcels for
2 competitive offer and subsequent project-specific analysis.

3 4 5 **11.4.14 Visual Resources**

6 7 8 **11.4.14.1 Affected Environment**

9
10 The proposed Dry Lake Valley North SEZ boundaries have been revised and extend
11 approximately 11.3 mi (18.2 km) north–south and approximately 5.7 mi (9.2 km) wide (see
12 Figure 11.4.14.1-1). The boundaries of the proposed SEZ have been changed to exclude mainly
13 the northern portion of the SEZ; 48,148 acres (195 km²) were excluded. In addition, 3,657 acres
14 (15 km²) of wetland and dry lake within the SEZ boundaries have been identified as non-
15 development areas. The remaining developable area within the SEZ now includes an area of
16 25,069 acres (101.5 km²). Because of the reduction in size of the SEZ, the total acreage of the
17 lands visible within the 25-mi (40-km) viewshed of the SEZ has decreased.

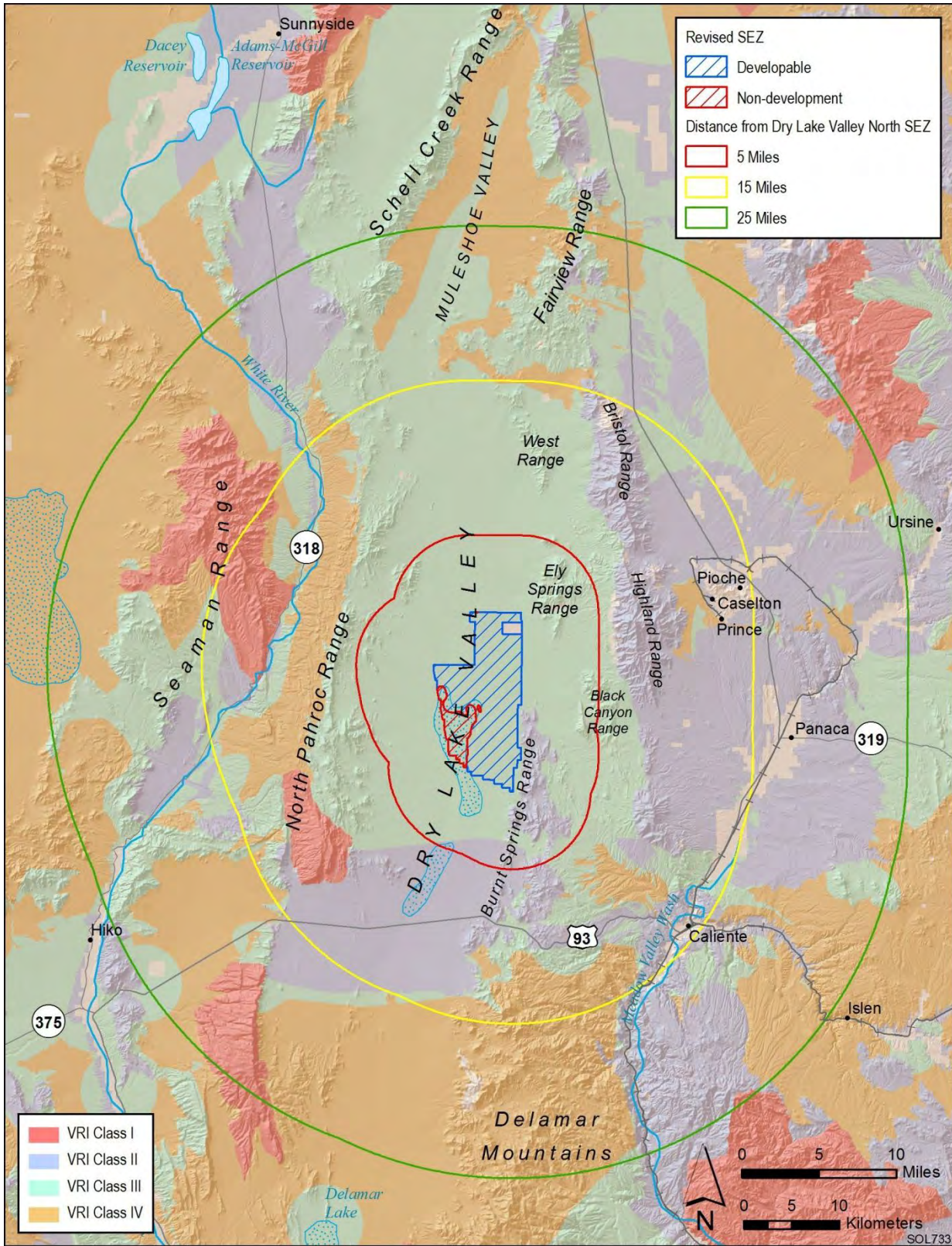
18
19 In addition, as a result of the boundary changes, the Dry Lake Valley North SEZ is now
20 limited to the Shadscale-Dominated Saline Basins and the Salt Deserts Level IV ecoregions
21 (Bryce et al. 2003). The SEZ now ranges in elevation from 4,620 ft (1,408 m) in the central
22 portion to approximately 4,800 ft (1,463 m) in the northern portion.

23
24 The Draft Solar PEIS presented VRI information based on 2004 data. A new VRI for the
25 Southern Nevada District was completed in October 2011 (BLM 2011a). An updated VRI map
26 for the SEZ and surrounding lands is shown in Figure 11.4.14.1-1.

27
28 The Dry Lake Valley is an open valley blanketed with sage, rabbitbrush, and grasses
29 (BLM 2011a). As shown in Figure 11.4.14.1-1, the updated VRI class for the SEZ is VRI
30 Class III, indicating moderate relative visual values (BLM 2011a). The inventory indicates
31 moderate scenic quality for the SEZ and its immediate surroundings. Areas to the east of the
32 SEZ, near the Panaca Basin, received a high scenic quality rating and were assigned VRI
33 Class II, including high relative visual value. Positive scenic quality attributes included its
34 scarcity, adjacent scenery, color, and vegetation.

35
36 The SEZ also was assigned a high sensitivity level in the VRI. The Silver State OHV
37 Trail surrounds the SEZ and is a popular trail for multiple uses. The VRI report indicates that the
38 SEZ contains areas that are heavily used and have a high level of public interest. In addition,
39 people have a high level of concern for the management of special areas located within and near
40 the SEZ (BLM 2011a). For instance, the Chief Mountain SRMA is located to the southeast of the
41 SEZ. Portions of this area are located within 1 mi (1.6 km) of the SEZ.

42
43 Lands in the Ely District Office within the 25-mi (40-km), 650-ft (198-m) viewshed of
44 the revised SEZ include 11,081 acres (44.8 km²) of VRI Class I areas; 80,472 acres (325.7 km²)
45 of VRI Class II areas, 265,234 acres (1,073.4 km²) of VRI Class III areas, and 29,272 acres
46 (118.5 km²) of VRI Class IV areas.



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

1 **11.4.14.2 Impacts**
2

3 The reduction in size of the proposed Dry Lake Valley North SEZ substantially decreases
4 the total visual impacts associated with solar energy development in the SEZ. It limits the total
5 amount of solar facility infrastructure that would be visible and reduces the geographic extent of
6 the visible infrastructure.
7

8 The reduction in size of the SEZ eliminated approximately 63% of the original SEZ. The
9 resulting visual contrast reduction for any given point within view of the SEZ would vary greatly
10 depending on the viewpoint's distance and direction from the SEZ. Contrast reduction generally
11 would be greatest for viewpoints closest to the portions of the SEZ that were eliminated and
12 especially for those that had broad wide-angle views of these areas. In general, contrast
13 reductions also would be larger for elevated viewpoints relative to non-elevated viewpoints,
14 because the reduction in area of the solar facilities would be more apparent when looking down
15 at the SEZ than when looking across it.
16

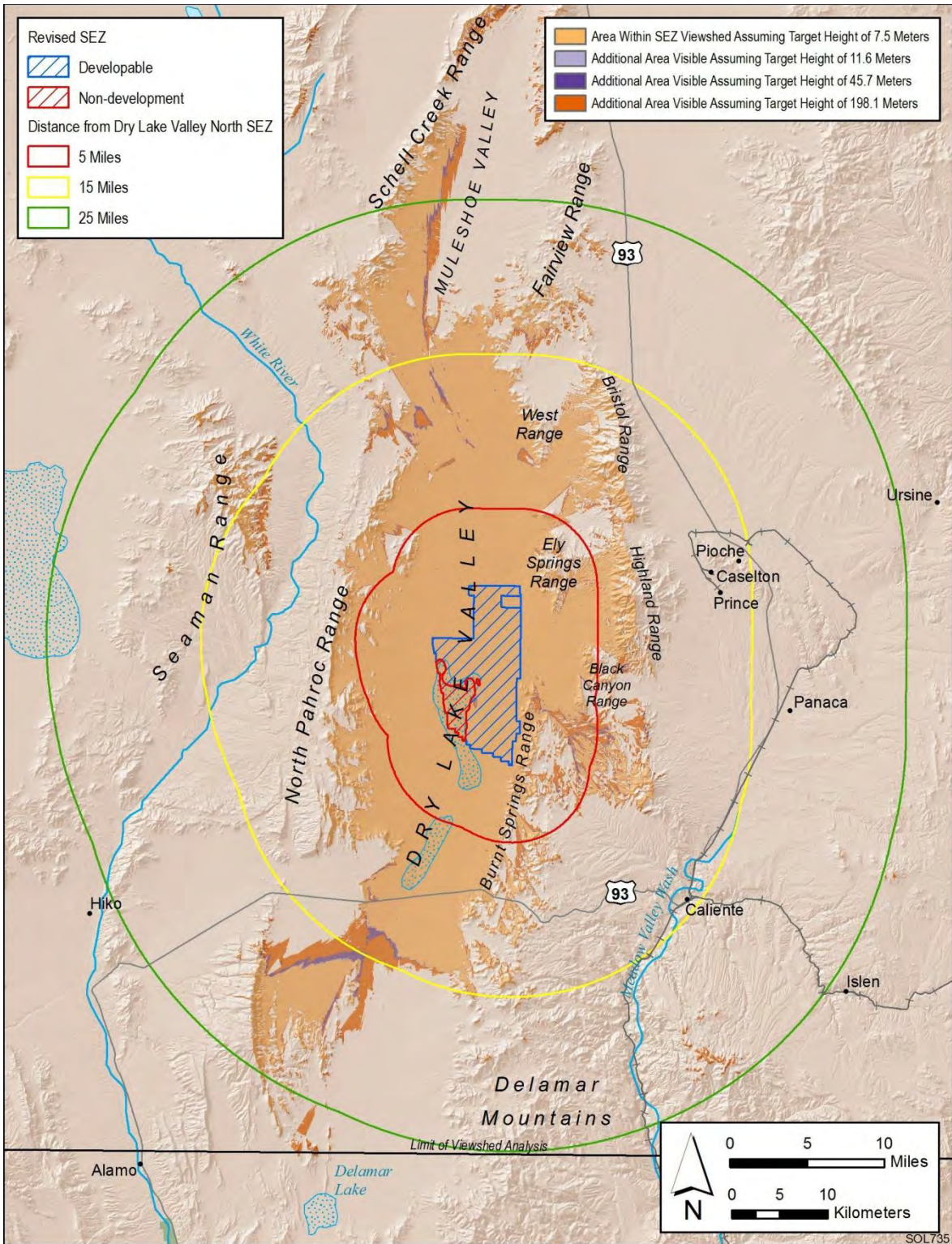
17
18 ***11.4.14.2.1 Impacts on the Proposed Dry Lake Valley North SEZ***
19

20 Although the reduction in size of the SEZ substantially reduces visual contrasts
21 associated with solar development, solar development still would involve major modification of
22 the existing character of the landscape; it likely would dominate the views from most locations
23 within the SEZ. Additional impacts would occur as a result of the construction, operation, and
24 decommissioning of related facilities, such as access roads and electric transmission lines. In
25 general, strong visual contrasts from solar development still would be expected to be observed
26 from viewing locations within the SEZ.
27

28
29 ***11.4.14.2.2 Impacts on Lands Surrounding the Proposed Dry Lake Valley North SEZ***
30

31 For the Draft Solar PEIS, preliminary viewshed analyses were conducted to identify
32 which lands surrounding the proposed SEZ could have views of solar facilities in at least some
33 portion of the SEZ (see Appendices M and N of the Draft for important information on
34 assumptions and limitations of the methods used). Four viewshed analyses were conducted,
35 assuming four different heights representative of project elements associated with potential solar
36 energy technologies: PV and parabolic trough arrays, 24.6 ft (7.5 m); solar dishes and power
37 blocks for CSP technologies, 38 ft (11.6 m); transmission towers and short solar power towers,
38 150 ft (45.7 m); and tall solar power towers, 650 ft (198.1 m).
39

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



1
 2 **FIGURE 11.4.14.2-1 Viewshed Analyses for the Proposed Dry Lake Valley North SEZ as**
 3 **Revised and Surrounding Lands, Assuming Viewshed Heights of 24.6 ft (7.5 m), 38 ft**
 4 **(11.6 m), 150 ft (45.7 m), and 650 ft (198.1 m) (shaded areas indicate lands from which solar**
 5 **development and/or associated structures within the SEZ could be visible)**

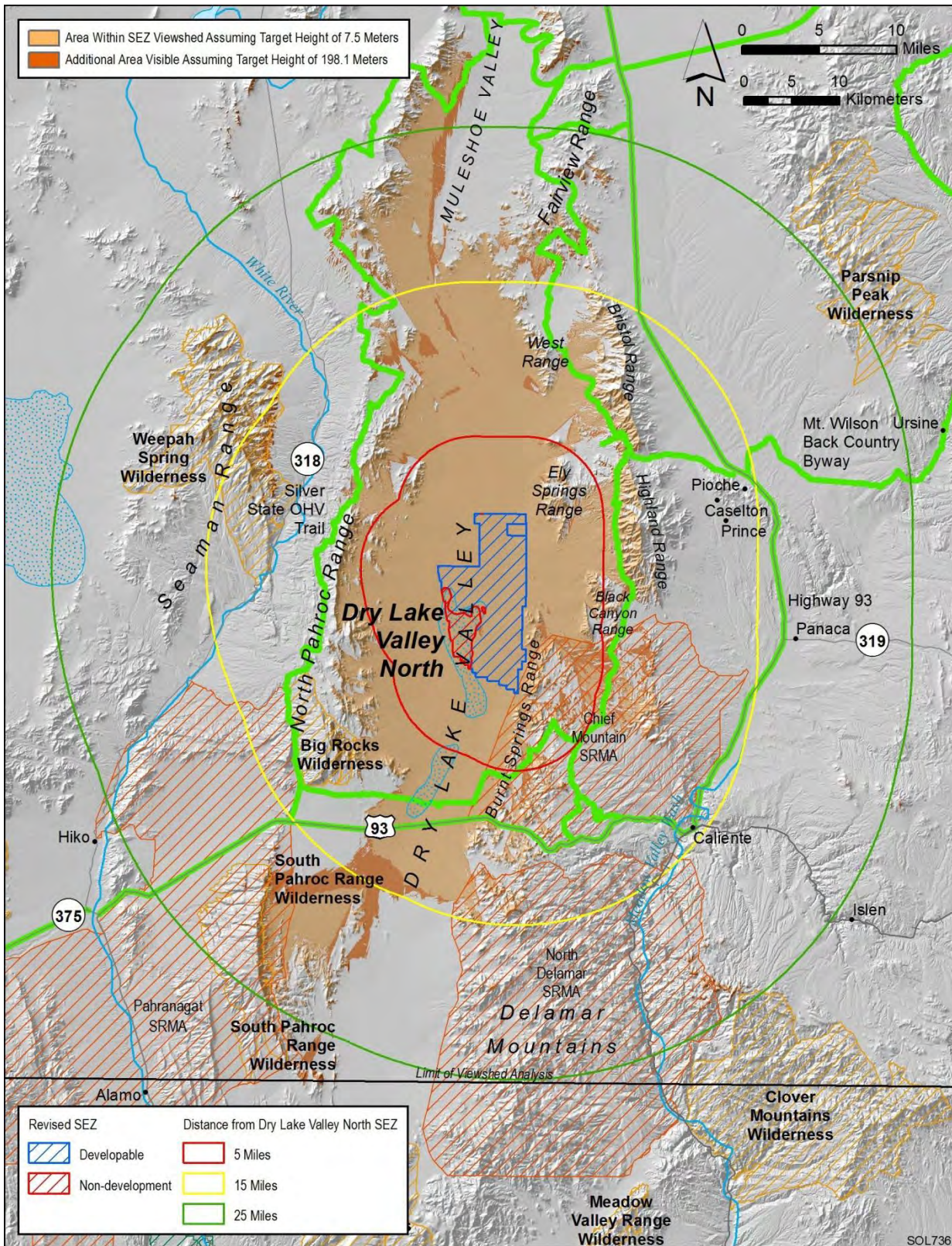
1 areas are locations from which PV and parabolic trough arrays located in the SEZ could be
2 visible. Solar dishes and power blocks for CSP technologies would be visible from the areas
3 shaded in light brown and the additional areas shaded in light purple. Transmission towers and
4 short solar power towers would be visible from the areas shaded light brown, light purple, and
5 the additional areas shaded in dark purple. Power tower facilities located in the SEZ could be
6 visible from areas shaded light brown, light purple, dark purple, and at least the upper portions
7 of power tower receivers in the additional areas shaded in medium brown.
8
9

10 ***11.4.14.2.3 Impacts on Selected Federal-, State-, and BLM-Designated Sensitive*** 11 ***Visual Resource Areas and Other Lands and Resources*** 12

13 Figure 11.4.14.2-2 shows the results of a GIS analysis that overlays selected federal-,
14 state-, and BLM-designated sensitive visual resource areas onto the combined tall solar power
15 tower (650 ft [198.1 m]) and PV and parabolic trough array (24.6 ft [7.5 m]) viewsheds in order
16 to illustrate which of these sensitive visual resource areas would have views of (and potentially
17 be subject to visual impacts from) solar facilities within the SEZ. Distance zones that correspond
18 with BLM's VRM system-specified foreground-middleground distance (5 mi [8 km]),
19 background distance (15 mi [24 km]), and a 25-mi (40-km) distance zone are shown to indicate
20 the effect of distance from the SEZ on impact levels. A similar analysis was conducted for the
21 Draft Solar PEIS.
22

23 The scenic resources included in the analysis were as follows:
24

- 25 • National Parks, National Monuments, National Recreation Areas, National
26 Preserves, National Wildlife Refuges, National Reserves, National
27 Conservation Areas, National Historic Sites;
28
- 29 • Congressionally authorized Wilderness Areas;
30
- 31 • Wilderness Study Areas;
32
- 33 • National Wild and Scenic Rivers;
34
- 35 • Congressionally authorized Wild and Scenic Study Rivers;
36
- 37 • National Scenic Trails and National Historic Trails;
38
- 39 • National Historic Landmarks and National Natural Landmarks;
40
- 41 • All-American Roads, National Scenic Byways, State Scenic Highways, and
42 BLM- and USFS-designated scenic highways/byways;
43
- 44 • BLM-designated Special Recreation Management Areas; and
45
- 46 • ACECs designated because of outstanding scenic qualities.
47



1
 2 **FIGURE 11.4.14.2-2 Overlay of Selected Sensitive Visual Resource Areas onto Combined 650-ft**
 3 **(198.1-m) and 24.6-ft (7.5-m) Viewsheds for the Proposed Dry Lake Valley North SEZ as Revised**

1 The results of the GIS analyses are summarized in Table 11.4.14.2-1. The change in size
2 of the SEZ alters the viewshed, such that the visibility of the SEZ and solar facilities within the
3 SEZ from the surrounding lands would be reduced.
4

5 With the reduction in size of the SEZ, solar energy development within the SEZ would be
6 expected to create minimal or weak visual contrasts for viewers within four of the surrounding
7 scenic resource areas and other resources listed in Table 11.4.14.2-1. Moderate or strong visual
8 contrasts would occur in the remaining areas, including the Big Rocks WA, the Weepah Springs
9 WA, U.S. 93 Scenic Highway, the Silver State OHV Trail, and the Chief Mountain SRMA.
10

11 ***11.4.14.2.4 Summary of Visual Resource Impacts for the Proposed Dry Lake Valley*** 12 ***North SEZ*** 13

14 The visual contrast analysis in the Draft Solar PEIS determined that because there could
15 be multiple solar facilities within the Dry Lake Valley North SEZ, a variety of technologies
16 employed, and a range of supporting facilities required, solar development within the SEZ would
17 make it essentially industrial in appearance and would contrast strongly with the surrounding
18 mostly natural-appearing landscape.
19

20 The reduction in size of the SEZ diminishes the visual contrast associated with solar
21 facilities as seen both within the SEZ and from surrounding lands in both daytime and nighttime
22 views. The reductions in visual contrast can be summarized as follows:
23

- 24 • Within the Dry Lake Valley North SEZ: Contrasts experienced by viewers in
25 the northern and eastern portion of the SEZ would be reduced because of the
26 elimination of 48,148 acres (195 km²) of land within the SEZ; however,
27 strong contrasts still would result in the remaining developable area. A
28 reduction in contrasts also would be present in the southwest portion of the
29 SEZ, where 3,657 acres (15 km²) were identified as non-developable areas
30 because of the presence of wetland and dry lake.
31
- 32 • Big Rocks WA: A reduction in contrasts would be anticipated because of the
33 removal of non-developable lands in the southwest of the SEZ; however, solar
34 development within the SEZ still would cause weak to strong contrasts,
35 depending on viewer location within the WA.
36
- 37 • Clover Mountains WA: A reduction in contrasts would be anticipated because
38 of the reduction in size of the SEZ; however, solar development within the
39 SEZ still would cause minimal contrasts.
40
- 41 • Far South Egans WA: Far South Egans WA is no longer located within the
42 25-mi (40-km) viewshed; expected contrast levels would be lowered from
43 “minimal to weak” to “none.”
44

1 **TABLE 11.4.14.2-1 Selected Potentially Affected Sensitive Visual Resources within a 25-mi**
 2 **(40-km) Viewshed of the Proposed Dry Lake Valley North SEZ as Revised, Assuming a**
 3 **Target Height of 650 ft (198.1 m)**

Feature Type	Feature Name (Total Acreage) ^{a,b}	Feature Area or Linear Distance		
		Visible within 5 mi ^c	Visible Between	
			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 km², multiply by 0.004047. To convert mi to km, multiply by 1.609.

^c Percentage of total feature acreage or road length viewable.

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- 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 km²) 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 km²). 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.”
 - Pahrangat 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.

1 **11.4.14.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on visual resources are
4 described in Section A.2.2 of Appendix A of this Final Solar PEIS. While application of the
5 programmatic design features would reduce potential visual impacts somewhat, the degree of
6 effectiveness of these design features can only be assessed at the site- and project-specific level.
7 Given the large scale, reflective surfaces, and strong regular geometry of utility-scale solar
8 energy facilities and the lack of screening vegetation and landforms within the SEZ viewshed,
9 siting the facilities away from sensitive visual resource areas and other sensitive viewing areas
10 would be the primary means of mitigating visual impacts. The effectiveness of other visual
11 impact mitigation measures generally would be limited.
12

13 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
14 analyses due to changes to the SEZ boundaries, and consideration of comments received as
15 applicable, no SEZ-specific design features for visual resources have been identified in this
16 Final Solar PEIS. Some SEZ-specific design features may be identified through the process of
17 preparing parcels for competitive offer and subsequent project-specific analysis.
18
19

20 **11.4.15 Acoustic Environment**
21

22 **11.4.15.1 Affected Environment**
23

24 The developable area of the proposed Dry Lake Valley North SEZ was reduced by about
25 67%, from 76,874 acres (311.09 km²) to 25,069 acres (101.45 km²); mainly the northern portion
26 of the SEZ was removed, and a wetland and dry lake area was identified as a non-development
27 area. These reductions in the boundaries increased the distances to nearby residences or
28 communities by up to 3 mi (5 km). Consequently, noise levels at these receptors will be
29 somewhat lower than those presented in the Draft Solar PEIS.
30
31

32 Comments provided by the DoD on the Supplement to the Draft Solar PEIS noted
33 that MTRs and operating areas authorized for supersonic flight by the Federal Aviation
34 Administration (FAA) at and above 5,000-ft (1,524-m) AGL exist directly above the proposed
35 Dry Lake Valley North SEZ. The comments indicated that noise and associated overpressures
36 created by authorized supersonic flight above and proximal to the SEZ could adversely affect
37 solar technology and/or infrastructure.
38
39

40 **11.4.15.2 Impacts**
41

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

1 communities such as Caselton and Prince are located more than 12 mi (19 km) east of the SEZ
2 and screened from the area by the Highland and Black Canyon mountain ranges.
3
4

5 **11.4.15.2.1 Construction**

6

7 The noise impact analysis in the Draft Solar PEIS assumed that a maximum of three
8 projects (9,000 acres [36.4 km²]) would be developed at any one time within the SEZ. With the
9 reduction in size of the proposed SEZ, the noise impact analysis for this Final Solar PEIS
10 assumes that two projects (6,000 acres [24.3 km²]) would be under development at a given time.
11

12 The conclusions in the Draft Solar PEIS remain valid. With the updated SEZ boundaries,
13 estimated construction noise levels from a single project at the nearest residences would be
14 about 14 dBA, and for a 10-hour daytime work schedule, a 40-dBA L_{dn} is estimated, that is, no
15 contribution from construction activities. If two projects were to be built in the eastern portion of
16 the proposed SEZ, noise levels at the nearest residences would be about 3 dBA higher, but there
17 would be no increase in L_{dn}. In either case, construction noise would be well below a typical
18 daytime mean rural background level of 40 dBA, and the estimated L_{dn} at these residences
19 would be well below the EPA guidance of 55 dBA L_{dn} for residential areas.
20

21 As stated in the Draft Solar PEIS, noise at the Chief Mountains SRMA, which is
22 managed primarily for motorized OHV recreation, is not likely to be an issue.
23

24 Construction noise and vibration impacts would be the same or less than those presented
25 in the Draft Solar PEIS, and the conclusions of the Draft remain valid. Construction would cause
26 minimal, unavoidable, but localized, short-term noise impacts on neighboring communities. No
27 adverse vibration impacts are anticipated from construction activities, including pile driving for
28 dish engines.
29
30

31 **11.4.15.2.2 Operations**

32

33 Because of boundary changes and the identification of non-development areas for the
34 proposed Dry Lake Valley North SEZ, noise impacts for this Final Solar PEIS were remodeled.
35
36

37 **Parabolic Trough and Power Tower**

38

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

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

3 4 5 **Dish Engines**

6
7 The reduction in size of the proposed Dry Lake Valley North SEZ by about 67% would
8 reduce the number of dish engines by a similar percentage. The estimated noise level at the
9 nearest residences would be about 34 dBA, lower than the typical daytime mean rural
10 background level of 40 dBA, and for 12 hours of operation, about 41 dBA L_{dn}, well below the
11 EPA guideline of 55 dBA L_{dn} for residential areas. The conclusion of the Draft Solar PEIS that
12 noise levels at the nearest residences caused by operating a dish engine facility could cause
13 minor adverse impacts on the nearest residence, depending on background noise levels and
14 meteorological conditions, remains valid.

15
16 Changes in the proposed SEZ boundaries would not affect the discussions of vibration,
17 transformer and switchyard noise, and transmission line corona discharge presented in the Draft
18 Solar PEIS. Noise impacts from these sources would be negligible.

19 20 21 ***11.4.15.2.3 Decommissioning and Reclamation***

22
23 The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation
24 activities would be of short duration, and their potential noise impacts would be minor and
25 temporary. Potential noise and vibration impacts on surrounding communities would be
26 correspondingly less than those for construction activities.

27 28 29 **11.4.15.3 SEZ-Specific Design Features and Design Feature Effectiveness**

30
31 Required programmatic design features that would reduce noise impacts are described in
32 Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design
33 features will provide some protection from noise impacts. Because of the considerable separation
34 distances, activities within the proposed Dry Lake Valley North SEZ during construction and
35 operation would be anticipated to cause only minimal increases in noise levels at the nearest
36 residences and to have minor impacts on nearby specially designated areas.

37
38 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
39 analyses due to changes to the SEZ boundaries, and consideration of comments received as
40 applicable, no SEZ-specific design features were identified for noise. Some SEZ-specific design
41 features may be identified through the process of preparing parcels for competitive offer and
42 subsequent project-specific analysis.

1 **11.4.16 Paleontological Resources**

2
3
4 **11.4.16.1 Affected Environment**

5
6 Data provided in the Draft Solar PEIS remain valid, with the following updates:

- 7
8 • The change in developable area for the proposed Dry Lake Valley North SEZ
9 has increased the percentage of playa deposits, PFYC Class 3b, relative to the
10 alluvial deposits that are PFYC Class 2.
11
12 • The BLM Regional Paleontologist may have additional information regarding
13 the paleontological potential of the SEZ and be able to update the temporary
14 assignment of PFYC Class 2 and 3b as used in the Draft Solar PEIS.
15

16
17 **11.4.16.2 Impacts**

18
19 The assessment provided in the Draft Solar PEIS remains valid. Few, if any, impacts on
20 significant paleontological resources are likely to occur in the proposed Dry Lake Valley North
21 SEZ. However, a more detailed look at the geological deposits of the SEZ is needed to determine
22 whether a paleontological survey is warranted.
23

24
25 **11.4.16.3 SEZ-Specific Design Features and Design Feature Effectiveness**

26
27 Required programmatic design features that would reduce impacts on paleontological
28 resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Impacts would
29 be minimized through the implementation of required programmatic design features, including a
30 stop-work stipulation in the event that paleontological resources are encountered during
31 construction, as described in Section A.2.2 of Appendix A.
32

33 On the basis of analyses conducted for the Draft Solar PEIS, updates to those analyses
34 due to changes to the SEZ boundaries, and consideration of comments received as applicable, no
35 SEZ-specific design features for paleontological resources have been identified. If the geological
36 deposits are determined to be as described in the Draft Solar PEIS and are predominantly
37 classified as PFYC Class 2, mitigation of paleontological resources within most of the proposed
38 Dry Lake Valley North SEZ would not likely be necessary. The need for and nature of any SEZ-
39 specific design features for the remaining portions of the SEZ would depend on the results of
40 future paleontological investigations. Some SEZ-specific design features may be identified
41 through the process of preparing parcels for competitive offer and subsequent project-specific
42 analysis.
43

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

1 **11.4.17 Cultural Resources**

2
3
4 **11.4.17.1 Affected Environment**

5
6 Data provided in the Draft Solar PEIS remain valid, with the following updates:

- 7
8 • The amount of land that has been surveyed for cultural resources has
9 increased slightly from 2.8 to 3.5% of the SEZ, totaling 880 acres (3.6 km²).
- 10
11 • The number of cultural resource sites in the SEZ has decreased from 53 to
12 21 sites; however, the 4 sites identified in the Draft Solar PEIS as potentially
13 eligible for listing in the NRHP are still located within the SEZ.
- 14
15 • The historic mining claims located to the north and east of the SEZ are no
16 longer within the 5-mi (8-km) buffer.
- 17
18 • The distance from the SEZ boundary to the NRHP-listed Bristol Wells site has
19 increased from 5 mi (8 km) to 14 mi (23 km).
- 20
21 • A tribally approved ethnographic study of the Dry Lake Valley North SEZ
22 was not conducted; however, ethnographic studies of the Delamar Valley SEZ
23 immediately to the south and other nearby SEZs were conducted (SWCA and
24 University of Arizona 2011), and some of that information could be applicable
25 to the Dry Lake Valley North SEZ. Tribes have expressed concern about the
26 cultural resources that are found in the SEZs and their encompassing
27 landscape, as well as important water sources and traditional plant and animal
28 resources. The Paiute are concerned with the effects on their cultural and
29 spiritual lifeways of harnessing and distributing the sun's energy.
- 30
31 • Additional information may be available to characterize the area surrounding
32 the proposed SEZ in the future (after the Final Solar PEIS is completed), as
33 follows:
- 34 – Results of a Class I literature file search to better understand (1) the site
35 distribution pattern in the vicinity of the SEZ, (2) trail networks through
36 existing ethnographic reports, and (3) overall cultural sensitivity of the
37 landscape.
- 38 – Results of a Class II stratified random sample survey of 1,253 acres
39 (5 km²), or roughly 5% of the SEZ. The Class II survey is being
40 conducted by the BLM to meet its ongoing Section 110 responsibilities
41 under the NHPA. The objectives of the Class II surveys currently under
42 contract are to reliably predict the density, diversity, and distribution of
43 archaeological sites within each SEZ in Arizona, California, and Nevada
44 and create sensitivity zones based on projected site density, complexity,
45 likely presence of human burials, and/or other tribal concerns. The BLM
46 will continue to request funding to support additional Class II sample

1 inventories in the SEZ areas. Areas of interest, such as dune areas and
2 along washes, as determined through a Class I review and, if appropriate,
3 some subsurface testing of dune and/or colluvium areas, should be
4 considered in sampling strategies for future surveys.

- 5 – Continuation of government-to-government consultation as described in
6 Section 2.4.3 of the Supplement to the Draft Solar PEIS and IM 2012-032
7 (BLM 2011b), including follow-up to recent ethnographic studies with
8 tribes not included in the original studies to determine whether those tribes
9 have similar concerns.

10 11 12 **11.4.17.2 Impacts**

13
14 As stated in the Draft Solar PEIS, direct impacts on significant cultural resources could
15 occur in the proposed Dry Lake Valley North SEZ; however, further investigation is needed.
16 Impacts on prehistoric cultural resources are possible in the proposed Dry Lake Valley North
17 SEZ in the dry lake, alluvial fans, and dune areas in the southern portion of the SEZ. Impacts on
18 historic resources are also possible, but to a lesser degree. The following update is based on the
19 revised boundaries of the SEZ:

- 20
21 • Thirty-two fewer sites are potentially affected within the reduced footprint of
22 the SEZ; however, there are still four sites located in the proposed SEZ that
23 are known to be eligible for listing in the NRHP.

24 25 26 **11.4.17.3 SEZ-Specific Design Features and Design Feature Effectiveness**

27
28 Required programmatic design features that would reduce impacts on cultural resources
29 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Programmatic design
30 features assume that the necessary surveys, evaluations, and consultations will occur.

31
32 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
33 analyses due to changes to the SEZ boundaries, and consideration of comments received as
34 applicable, the following SEZ-specific design feature for cultural resources has been identified:

- 35
36 • The existing access road that connects the proposed SEZ to U.S. 93 should be
37 upgraded instead of constructing a new access road to reduce ground
38 disturbances and the potential for impacts on cultural resources.

39
40 Additional SEZ-specific design features would be determined in consultation with the
41 Nevada SHPO and affected tribes and would depend on the results of future investigations. Some
42 SEZ-specific design features may be identified through the process of preparing parcels for
43 competitive offer and subsequent project-specific analysis.

1 **11.4.18 Native American Concerns**

2
3
4 **11.4.18.1 Affected Environment**

5
6 Data provided in the Draft Solar PEIS remain valid, with the following updates:

- 7
- 8 • A tribally approved ethnographic study of the Dry Lake Valley North SEZ
9 was not conducted; however, ethnographic studies of the Delamar Valley
10 SEZ and other nearby SEZs were conducted (SWCA and University of
11 Arizona 2011), and some of that information could be applicable to the Dry
12 Lake Valley North SEZ. Tribes have expressed concerns about the cultural
13 resources that are found in the SEZs and their encompassing landscape, as
14 well as important water sources and traditional plant and animal resources.
15
 - 16 • The Paiute are concerned with the effects on their cultural and spiritual
17 lifeways of harnessing and distributing the sun’s energy.
18
 - 19 • Tribal representatives from the Moapa Band of Paiute Indians believe that all
20 cultural resources and landscapes are important in helping the Southern Paiute
21 to understand their past, present, and future.
22
 - 23 • Robber Roost Hills, Stapely Knoll, Fly Springs Range, Highland Range,
24 North Pahroc Range, Black Rock Knoll, Clover Mountains, Delamar
25 Mountains, and Fairview Range are all elevated areas found outside of the
26 Dry Lake Valley North SEZ that may be of significant importance to tribes.
27 Visual impacts on the valley from mountain summits are likely to occur as a
28 result of solar development.
29
 - 30 • Portions of Coyote Wash, Bailey Wash, Silverhorn Wash, and Wheatgrass
31 Wash intersect the proposed Dry Lake Valley North SEZ and feed into the
32 Pleistocene Dry Lake. A series of springs is found in the Delamar Mountains,
33 Fairview Range, and North Pahroc Range. Meadow Valley Wash is found to
34 the east of the Delamar and Clover Mountains. These water resources are
35 likely important to tribes and would be directly affected by solar development.
36
 - 37 • Mining sites, ranching sites, and the San Pedro–Los Angeles–Salt Lake
38 Railroad located in the surrounding area may have significant historical
39 importance to the Southern Paiute and Western Shoshone and may be affected
40 by solar development.
41
 - 42 • Plants and animals used as traditional sources of food and medicine may
43 reside in the proposed SEZ and would be directly affected by solar
44 development.
45

- 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.

1 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
2 analyses due to changes in SEZ boundaries, and consideration of comments received as
3 applicable, no SEZ-specific design features to address Native American concerns have been
4 identified. The need for and nature of SEZ-specific design features would be determined during
5 government-to-government consultation with the affected tribes as part of the process of
6 preparing parcels for competitive offer and subsequent project-specific analysis. Potentially
7 significant sites and landscapes in the vicinity of the SEZ associated with numerous washes,
8 mountain springs, and other water sources, the Delamar Mountains, Fairview Range, North
9 Pahroc Range, Robber Roost Hills, Stapely Knoll, Fly Springs Range, Highland Range, Black
10 Rock Knoll, and the Clover Mountains, as well as trails, mineral sources, historic mining and
11 ranching sites, burial sites, and other ceremonial and rock art areas, and traditionally important
12 plant and animal resources should be considered and discussed during consultation.
13
14

15 **11.4.19 Socioeconomics**

16 17 18 **11.4.19.1 Affected Environment**

19
20 Although the boundaries of the Dry Lake Valley North SEZ have been changed, the
21 socioeconomic ROI, the area in which site employees would live and spend their wages and
22 salaries and into which any in-migration would occur, includes the same counties and
23 communities as described in the Draft Solar PEIS, meaning that no updates to the affected
24 environment information given in the Draft Solar PEIS are required.
25
26

27 **11.4.19.2 Impacts**

28
29 Socioeconomic resources in the ROI around the SEZ could be affected by solar energy
30 development through the creation of direct and indirect employment and income, the generation
31 of direct sales and income taxes, SEZ acreage rental and capacity payments to the BLM, the
32 in-migration of solar facility workers and their families, and impacts on local housing markets
33 and local community service employment. The impact assessment has been updated in the
34 following sections.
35
36

37 ***11.4.19.2.1 Solar Trough***

38 39 40 **Construction**

41
42 Total construction employment impacts in the ROI (including direct and indirect impacts)
43 from the use of solar trough technologies would be up to 6,048 jobs (Table 11.4.19.2-1).
44 Construction activities would constitute 0.4 % of total ROI employment.
45
46

1
2
3

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 km²] 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.

1 A solar facility would also produce \$369.5 million in income. Direct sales taxes would be
2 \$2.4 million; direct income taxes in Utah, \$0.7 million.
3

4 Given the scale of construction activities and the low likelihood that the entire
5 construction workforce in the required occupational categories would be available within the
6 ROI, construction of a solar facility would mean that some in-migration of workers and their
7 families from outside the ROI would be required, with up to 1,486 persons in-migrating into the
8 ROI. Although in-migration may potentially affect local housing markets, the relatively small
9 number of in-migrants and the availability of temporary accommodations (hotels, motels, and
10 mobile home parks) mean that the impact of solar facility construction on the number of vacant
11 rental housing units would not be expected to be large, with up to 513 rental units expected to be
12 occupied in the ROI. This occupancy rate would represent 0.8% of the vacant rental units
13 expected to be available in the ROI.
14

15 In addition to the potential impact on housing markets, in-migration would affect
16 community service employment (education, health, and public safety). An increase in such
17 employment would be required to meet existing levels of service in the ROI. Accordingly, up to
18 13 new teachers, 3 physicians, and 3 public safety employee (career firefighters and uniformed
19 police officers) would be required in the ROI. These increases would represent 0.1% of total ROI
20 employment expected in these occupations.
21
22

23 **Operations**

24

25 Total operations employment impacts in the ROI (including direct and indirect
26 impacts) of a full build-out of the SEZ using solar trough technologies would be 1,347 jobs
27 (Table 11.4.19.2-1). Such a solar facility would also produce \$50.7 million in income.
28 Direct sales taxes would be \$0.3 million; direct income taxes in Utah, \$0.1 million. On the basis
29 of fees established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), acreage-
30 related fees would be \$1.6 million, and solar generating capacity fees would total at least
31 \$26.4 million.
32

33 As for the construction workforce, operation of a solar facility likely would require some
34 in-migration of workers and their families from outside the ROI, with up to 111 persons
35 in migrating into the ROI. Although in-migration may potentially affect local housing markets,
36 the relatively small number of in-migrants and the availability of temporary accommodations
37 (hotels, motels, and mobile home parks) mean that the impact of solar facility operation on the
38 number of vacant owner-occupied housing units would not be expected to be large, with up to
39 69 owner-occupied units expected to be occupied in the ROI.
40

41 In addition to the potential impact on housing markets, in-migration would affect
42 community service (health, education, and public safety) employment. An increase in such
43 employment would be required to meet existing levels of service in the provision of these
44 services in the ROI. Accordingly, up to one new teacher would be required in the ROI.
45
46

1 **11.4.19.2.2 Power Tower**

2
3
4 **Construction**

5
6 Total construction employment impacts in the ROI (including direct and indirect impacts)
7 from the use of power tower technologies would be up to 2,409 jobs (Table 11.4.19.2-2).
8 Construction activities would constitute 0.2% of total ROI employment. Such a solar facility
9 would also produce \$147.2 million in income. Direct sales taxes would be \$0.9 million; direct
10 income taxes in Utah, \$0.3 million.

11
12 Given the scale of construction activities and the low likelihood that the entire
13 construction workforce in the required occupational categories would be available within the
14 ROI, construction of a solar facility would mean that some in-migration of workers and their
15 families from outside the ROI would be required, with up to 592 persons in-migrating into the
16 ROI. Although in-migration may potentially affect local housing markets, the relatively small
17 number of in-migrants and the availability of temporary accommodations (hotels, motels, and
18 mobile home parks) mean that the impact of solar facility construction on the number of vacant
19 rental housing units would not be expected to be large, with up to 204 rental units expected to be
20 occupied in the ROI. This occupancy rate would represent 0.3% of the vacant rental units
21 expected to be available in the ROI.

22
23 In addition to the potential impact on housing markets, in-migration would affect
24 community service (education, health, and public safety) employment. An increase in such
25 employment would be required to meet existing levels of service in the ROI. Accordingly, up to
26 five new teachers, one physician, and one public safety employee would be required in the ROI.
27 These increases would represent less than 0.1% of total ROI employment expected in these
28 occupations.

29
30
31 **Operations**

32
33 Total operations employment impacts in the ROI (including direct and indirect
34 impacts) of a full build-out of the SEZ using power tower technologies would be 613 jobs
35 (Table 11.4.19.2-2). Such a solar facility would also produce \$21.2 million in income. Direct
36 sales taxes would be less than \$0.1 million; direct income taxes in Utah, less than \$0.1 million.
37 On the basis of fees established by the BLM in its Solar Energy Interim Rental Policy
38 (BLM 2010b), acreage-related fees would be \$1.6 million, and solar generating capacity fees
39 would total at least \$14.6 million.

40
41 As for the construction workforce, operation of a solar facility means that some
42 in-migration of workers and their families from outside the ROI would be required, with up to
43 58 persons in-migrating into the ROI. Although in-migration may potentially affect local housing
44 markets, the relatively small number of in-migrants and the availability of temporary
45 accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility
46 operation on the number of vacant owner-occupied housing units would not be expected to be
47 large, with up to 36 owner-occupied units expected to be required in the ROI.

1
2
3

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 km²] 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.

1 In addition to the potential impact on housing markets, in-migration would affect
2 community service (education, health, and public safety) employment. An increase in such
3 employment would be required to meet existing levels of service in the ROI. Accordingly, up to
4 one new teacher would be required in the ROI.
5
6

7 ***11.4.19.2.3 Dish Engine***

8
9

10 **Construction**

11

12 Total construction employment impacts in the ROI (including direct and indirect
13 impacts) from the use of dish engine technologies would be up to 979 jobs (Table 11.4.19.2-3).
14 Construction activities would constitute 0.1% of total ROI employment. Such a solar facility
15 would also produce \$59.8 million in income. Direct sales taxes would be \$0.4 million; direct
16 income taxes in Utah, \$0.1 million.
17

18 Given the scale of construction activities and the low likelihood that the entire
19 construction workforce in the required occupational categories would be available within the
20 ROI, construction of a solar facility would mean that some in-migration of workers and their
21 families from outside the ROI would be required, with up to 241 persons in-migrating into the
22 ROI. Although in-migration may potentially affect local housing markets, the relatively small
23 number of in-migrants and the availability of temporary accommodations (hotels, motels, and
24 mobile home parks) mean that the impact of solar facility construction on the number of vacant
25 rental housing units would not be expected to be large, with up to 83 rental units expected to be
26 occupied in the ROI. This occupancy rate would represent 0.1% of the vacant rental units
27 expected to be available in the ROI.
28

29 In addition to the potential impact on housing markets, in-migration would affect
30 community service (education, health, and public safety) employment. An increase in such
31 employment would be required to meet existing levels of service in the ROI. Accordingly, up to
32 two new teachers, one physician, and one public safety employee would be required in the ROI.
33 These increases would represent less than 0.1% of total ROI employment expected in these
34 occupations.
35
36

37 **Operations**

38

39 Total operations employment impacts in the ROI (including direct and indirect
40 impacts) of a full build-out of the SEZ using dish engine technologies would be 596 jobs
41 (Table 11.4.19.2-3). Such a solar facility would also produce \$20.6 million in income.
42 Direct sales taxes would be \$0.1 million; direct income taxes in Utah, \$0.1 million. On the basis
43 of fees established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), acreage-
44 related fees would be \$1.6 million, and solar generating capacity fees would total at least
45 \$14.6 million.
46

1
2
3

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 km²] 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.

1 As for the construction workforce, operation of a dish engine solar facility means that
2 some in-migration of workers and their families from outside the ROI would be required, with up
3 to 56 persons in-migrating into the ROI. Although in-migration may potentially affect local
4 housing markets, the relatively small number of in-migrants and the availability of temporary
5 accommodations (hotels, motels, and mobile home parks) mean that the impact of solar facility
6 operation on the number of vacant owner-occupied housing units would not be expected to be
7 large, with up to 35 owner-occupied units expected to be required in the ROI.
8

9 No new community service employment would be required to meet existing levels of
10 service in the ROI.
11

12 ***11.4.19.2.4 Photovoltaic***

13 **Construction**

14
15
16
17
18 Total construction employment impacts in the ROI (including direct and indirect impacts)
19 from the use of PV technologies would be up to 457 jobs (Table 11.4.19.2-4). Construction
20 activities would constitute less than 0.1 % of total ROI employment. Such a solar development
21 would also produce \$27.9 million in income. Direct sales taxes would be \$0.2 million; direct
22 income taxes in Utah, \$0.1 million.
23

24 Given the scale of construction activities and the low likelihood that the entire
25 construction workforce in the required occupational categories would be available with the ROI,
26 construction of a solar facility would mean that some in-migration of workers and their families
27 from outside the ROI would be required, with up to 112 persons in-migrating into the ROI.
28 Although in-migration may potentially affect local housing markets, the relatively small number
29 of in-migrants and the availability of temporary accommodations (hotels, motels, and mobile
30 home parks) mean that the impact of solar facility construction on the number of vacant rental
31 housing units would not be expected to be large, with up to 39 rental units expected to be
32 occupied in the ROI. This occupancy rate would represent 0.1% of the vacant rental units
33 expected to be available in the ROI.
34

35 In addition to the potential impact on housing markets, in-migration would affect
36 community service (education, health, and public safety) employment. An increase in such
37 employment would be required to meet existing levels of service in the ROI. Accordingly, up to
38 one new teacher would be required in the ROI. This increase would represent less than 0.1% of
39 total ROI employment expected in this occupation.
40

41 **Operations**

42
43
44 Total operations employment impacts in the ROI (including direct and indirect impacts)
45 of a full build-out of the SEZ using PV technologies would be 59 jobs (Table 11.4.19.2-4). Such
46 a solar facility would also produce \$2.1 million in income. Direct sales taxes would be less than

1
2
3

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 km²] 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.

4

1 \$0.1 million; direct income taxes in Utah would be less than \$0.1 million. On the basis of fees
2 established by the BLM in its Solar Energy Interim Rental Policy (BLM 2010b), acreage-related
3 fees would be \$1.6 million, and solar generating capacity fees would total at least \$11.7 million.
4

5 As for the construction workforce, operation of a PV solar facility would likely require
6 some in-migration of workers and their families from outside the ROI, with up to 6 persons
7 in-migrating into the ROI. Although in-migration may potentially affect local housing markets,
8 the relatively small number of in-migrants and the availability of temporary accommodations
9 (hotels, motels, and mobile home parks) mean that the impact of solar facility operation on the
10 number of vacant owner-occupied housing units would not be expected to be large, with up to
11 3 owner-occupied units expected to be required in the ROI.
12

13 No new community service employment would be required to meet existing levels of
14 service in the ROI.
15

16 **11.4.19.3 SEZ-Specific Design Features and Design Feature Effectiveness**

17

18
19 Required programmatic design features that would reduce socioeconomic impacts are
20 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
21 programmatic design features will reduce the potential for socioeconomic impacts during all
22 project phases.
23

24 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
25 analyses due to changes to the SEZ boundaries, and consideration of comments received as
26 applicable, no SEZ-specific design features to address socioeconomic impacts have been
27 identified. Some SEZ-specific design features may be identified through the process of preparing
28 parcels for competitive offer and subsequent project-specific analysis.
29
30

31 **11.4.20 Environmental Justice**

32

33 **11.4.20.1 Affected Environment**

34

35
36 The data presented in the Draft Solar PEIS have changed because of the change in
37 boundaries of the proposed Dry Lake Valley North SEZ. The affected environment information
38 for environmental justice presented in the Draft Solar PEIS has also changed, as reflected in the
39 following discussion.
40

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

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2
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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).

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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

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

3
4 Figure 11.4.20.1-1 shows the locations of the low-income population groups within the
5 50-mi (80-km) radius around the boundary of the SEZ.

6
7 At the individual block group level there are low-income populations in only one census
8 block group, in Iron County west of Cedar City (including the towns of Newcastle and Modena),
9 which has a low-income population that is more than 20 percentage points higher than the state
10 average. There are no block groups in the 50-mi (80-km) area with low-income populations that
11 exceed 50% of the total population. The number of minority individuals does not exceed the state
12 average by 20 percentage points or more, or 50% of the total population, in any block group in
13 the 50-mi (80-km) area.

14 15 16 **11.4.20.2 Impacts**

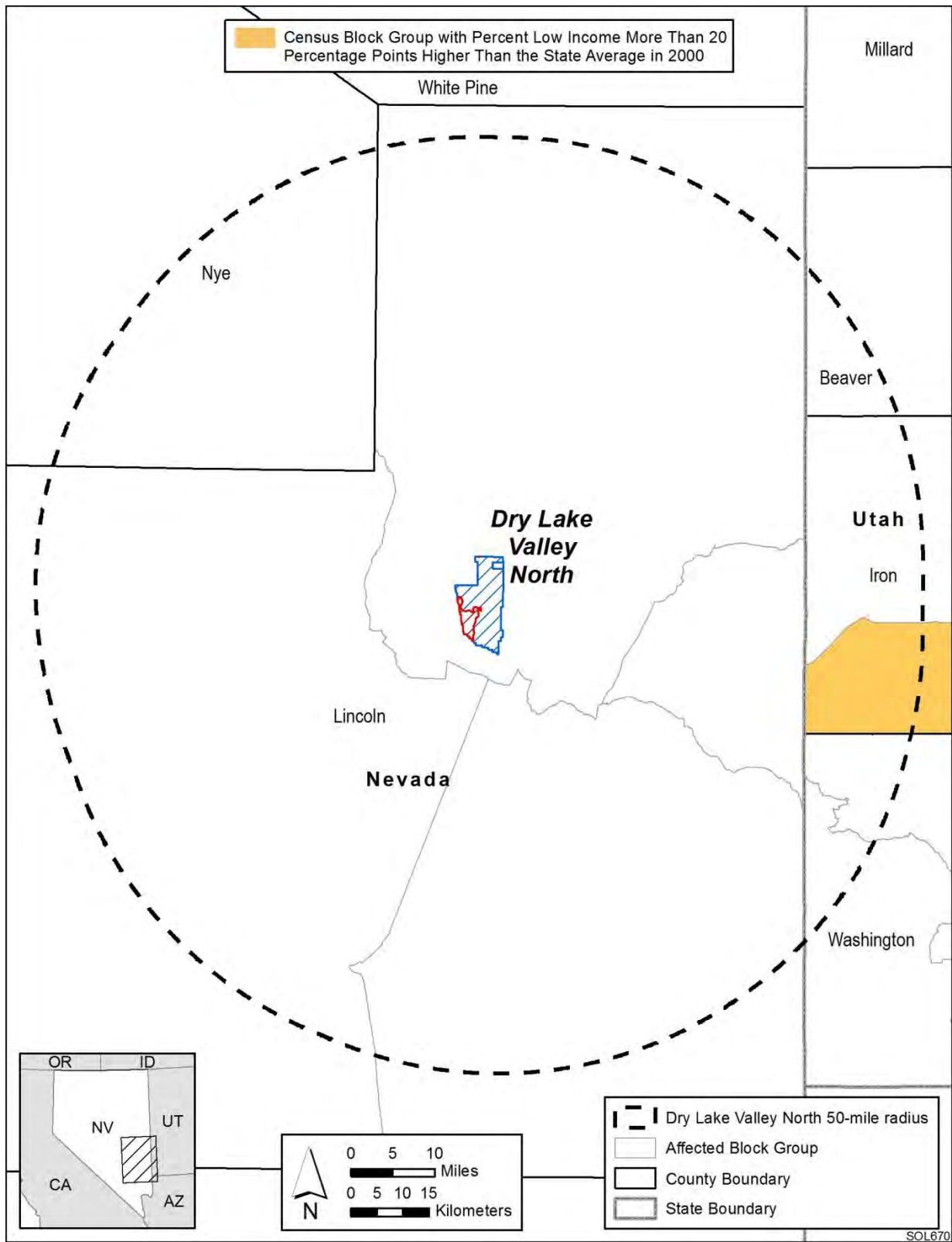
17
18 Environmental justice concerns common to all utility-scale solar energy facilities
19 are described in detail in Section 5.18 of the Draft Solar PEIS. The potentially relevant
20 environmental impacts associated with solar facilities within the proposed Dry Lake Valley
21 North SEZ include noise and dust during the construction; noise and EMF associated with
22 operations; visual impacts of solar generation and auxiliary facilities, including transmission
23 lines; access to land used for economic, cultural, or religious purposes; and effects on property
24 values as areas of concern that might potentially affect minority and low-income populations.

25
26 Potential impacts on low-income and minority populations could be incurred as a result
27 of the construction and operation of solar facilities involving each of the four technologies.
28 Impacts are likely to be small to moderate; however, there are no minority populations defined
29 by CEQ guidelines (CEQ 1997) (see Section 11.4.20.1 of the Draft Solar PEIS) within the 50-mi
30 (80-km) radius around the boundary of the SEZ. This means that any adverse impacts of solar
31 projects could not disproportionately affect minority populations. Because there are low-income
32 populations within the 50-mi (80-km) radius, there could be impacts on low-income populations.

33 34 35 **11.4.20.3 SEZ-Specific Design Features and Design Feature Effectiveness**

36
37 Required programmatic design features that would reduce potential environmental justice
38 impacts are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
39 programmatic design features will reduce the potential for environmental justice impacts.

40
41 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
42 analyses due to changes to the SEZ boundaries, and consideration of comments received as
43 applicable, no SEZ-specific design features for environmental justice have been identified.
44 Some SEZ-specific design features may be identified through the process of preparing parcels
45 for competitive offer and subsequent project-specific analysis.



1

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

1 **11.4.21 Transportation**

2
3
4 **11.4.21.1 Affected Environment**

5
6 The reduction in developable area of the proposed Dry Lake Valley North SEZ does not
7 change the information on affected environment provided in the Draft Solar PEIS
8

9
10 **11.4.21.2 Impacts**

11
12 As stated in the Draft Solar PEIS, the primary transportation impacts are anticipated to be
13 from commuting worker traffic. Single projects could involve up to 1,000 workers each day,
14 with an additional 2,000 vehicle trips per day (maximum) or possibly 4,000 vehicle trips per day
15 if two larger projects were to be developed at the same time. The volume of traffic on U.S. 93
16 would represent an increase in traffic of about a factor of 2 or 4, maximum, in the area of the
17 SEZ for one or two projects, respectively. Because higher traffic volumes would be experienced
18 during shift changes, traffic on either State Route 318 or U.S. 93 could experience moderate
19 slowdowns during these time periods in the general area of the SEZ. Local road improvements
20 would be necessary on State Route 318 or U.S. 93 near any site access point(s).
21

22 Solar development within the SEZ would affect public access along OHV routes that are
23 designated open and available for public use. Although open routes crossing areas granted
24 ROWs for solar facilities could be redesignated as closed (see Section 5.5.1 of the Draft Solar
25 PEIS), a programmatic design feature has been included under Recreation (Section A.2.2.6.1 of
26 Appendix A) that requires consideration of replacement of lost OHV route acreage and of access
27 across and to public lands.
28
29

30 **11.4.21.3 SEZ-Specific Design Features and Design Feature Effectiveness**

31
32 Required programmatic design features that would reduce transportation impacts are
33 described in Section A.2.2 of Appendix A of this Final Solar PEIS. The programmatic design
34 features, including local road improvements, multiple site access locations, staggered work
35 schedules, and ride-sharing, would all provide some relief to traffic congestion on local roads
36 leading to the SEZ. Depending on the location of solar facilities within the SEZ, more specific
37 access locations and local road improvements could be implemented.
38

39 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
40 analyses due to changes to the SEZ boundaries, and consideration of comments received as
41 applicable, no SEZ-specific design features to address transportation impacts have been
42 identified. Some SEZ-specific design features may be identified through the process of
43 preparing parcels for competitive offer and subsequent project-specific analysis.
44
45

1 **11.4.22 Cumulative Impacts**
2

3 The analysis of potential impacts in the vicinity of the proposed Dry Lake Valley North
4 SEZ presented in the Draft Solar PEIS is still generally applicable for this Final Solar PEIS,
5 although the impacts would decrease because the size of the developable area of the proposed
6 SEZ has been reduced to 25,069 acres (116.3 km²). The following sections include an update to
7 the information presented in the Draft Solar PEIS regarding cumulative effects for the proposed
8 Dry Lake Valley North SEZ.
9

10
11 **11.4.22.1 Geographic Extent of the Cumulative Impact Analysis**
12

13 The geographic extent of the cumulative impact analysis has not changed. The extent
14 varies on the basis of the nature of the resource being evaluated and the distance at which the
15 impact may occur (e.g., impacts on air quality may have a greater geographic extent than impacts
16 on visual resources). Most of the lands around the SEZ are administered by the BLM, the
17 USFWS, or the DoD. The BLM administers approximately 93.8% of the lands within a 50-mi
18 (80-km) radius of the SEZ.
19

20
21 **11.4.22.2 Overview of Ongoing and Reasonably Foreseeable Future Actions**
22

23 The proposed Dry Lake Valley North SEZ decreased from 76,874 acres (116.3 km²), and
24 an additional 3,657 acres (14.8 km²) within the SEZ were identified as non-development areas.
25 The Draft Solar PEIS included six other proposed SEZs in Nevada. Two of these, Delamar
26 Valley and East Mormon Mountain, have been removed from consideration.
27

28 There is only one pending ROW application for a solar facility within 50 mi (80 km) of
29 the proposed SEZ. The application is for a 7,680-acre (31-km²), 180-MW power tower facility
30 located about 15 mi (24 km) to the southwest of the SEZ. This solar facility is not currently
31 considered reasonably foreseeable, because there are no firm near-term plans and environmental
32 documentation has not been completed.
33

34
35 ***11.4.22.2.1 Energy Production and Distribution***
36

37 The list of reasonably foreseeable future actions that relate to energy production and
38 distribution, including potential solar energy projects, under the proposed action near the
39 proposed Dry Lake Valley North SEZ has been updated and is presented in Table 11.4.22.2-1.
40 Projects listed in the table are shown in Figure 11.4.22.2-1.
41

42
43 **Wilson Creek Wind Project**
44

45 Wilson Creek Wind Company, LLC, proposes to construct and operate a 990-MW wind-
46 powered generation facility on approximately 31,000 acres (125 km²) of land administered by
47 the BLM. The site is located approximately 20 mi (32 km) northeast of Pioche, Nevada, and

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

Description	Status	Resources Affected	Primary Impact Location
<i>Renewable Energy Development</i>			
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
<i>Transmission and Distribution Systems</i>			
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.

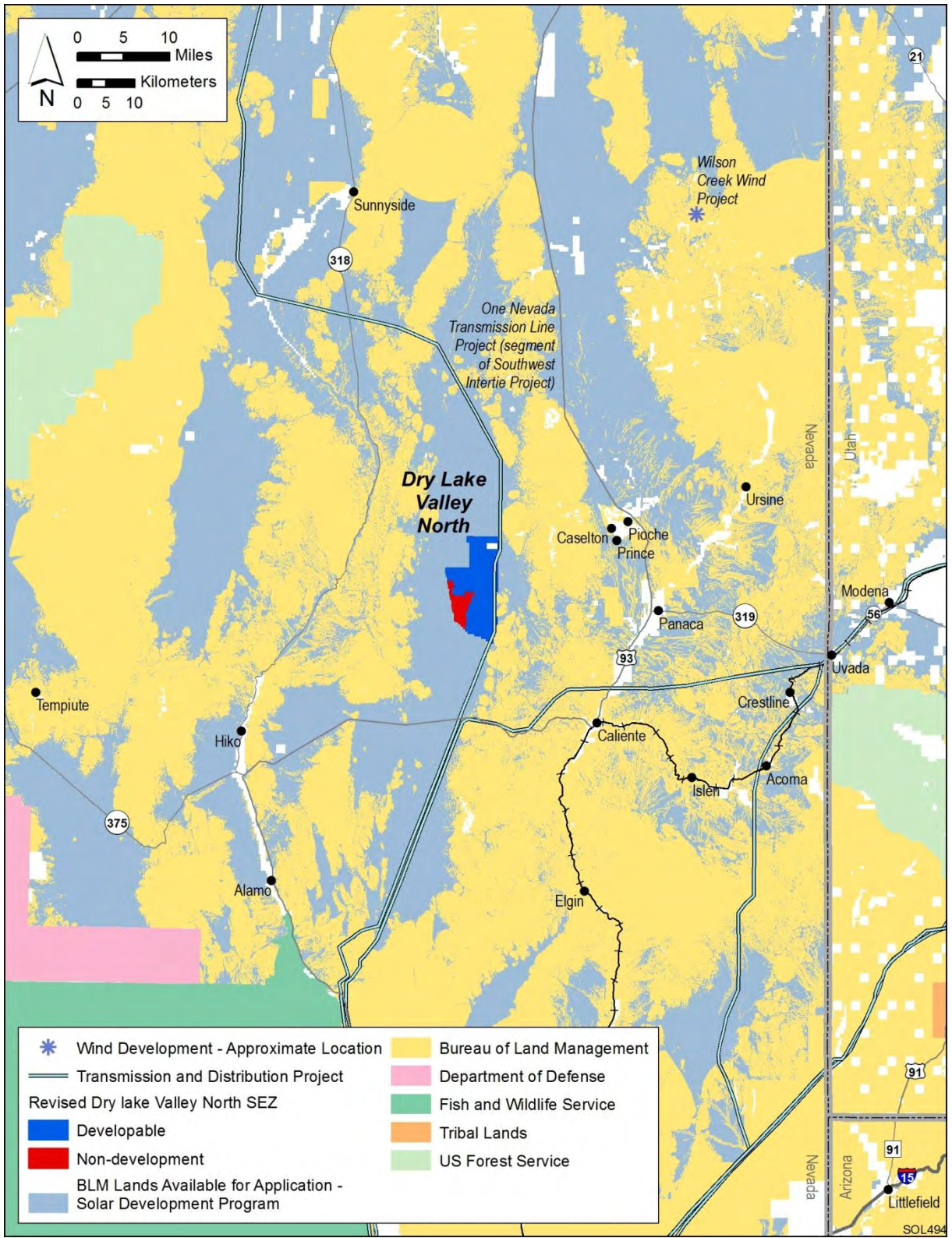
^d See BLM (2011d) for details

^e See TransCanada (2011) for details.

3
4
5 about 23 mi (37 km) northeast of the SEZ. The project would consist of up to 350 wind turbines
6 (BLM 2011c). The BLM work to process ROW applications for this project has been terminated
7 at the request of the proponents.

8
9
10 ***11.4.22.2.2 Other Actions***

11
12 The list of other reasonably foreseeable future actions near the proposed Dry Lake Valley
13 North SEZ has been updated and is presented in Table 11.4.22.2-2.



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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

1 **TABLE 11.4.22.2-2 Other Ongoing and Reasonably Foreseeable Actions near the Proposed Dry**
 2 **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

3

TABLE 11.4.22.2-2 (Cont.)

Description	Status	Resources Affected	Primary Impact Location
Pioche/Caselton Wildland Urban Interface Project	FONSI July 15, 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.

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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 km²) (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.

1 Overall, the incremental cumulative impacts associated with development in the proposed
2 Dry Lake Valley North SEZ during construction, operation, and decommissioning are expected
3 to be the same as or less than those discussed in the Draft Solar PEIS. This is because the size of
4 the Dry Lake Valley North SEZ has decreased by more than half from that presented in the Draft
5 Solar PEIS, thereby reducing the incremental contribution to cumulative impacts from the SEZ.
6
7

8 **11.4.23 Transmission Analysis** 9

10 The methodology for this transmission analysis is described in Appendix G of this Final
11 Solar PEIS. This section presents the results of the transmission analysis for the Dry Lake Valley
12 North SEZ, including the identification of potential load areas to be served by power generated at
13 the SEZ and the results of the DLT analysis. Unlike Sections 11.4.2 through 11.4.22, this section
14 is not an update of previous analysis for the Dry Lake Valley North SEZ; this analysis was not
15 presented in the Draft Solar PEIS. However, the methodology and a test case analysis were
16 presented in the Supplement to the Draft Solar PEIS. Comments received on the material
17 presented in the Supplement were used to improve the methodology for the assessment presented
18 in this Final Solar PEIS.
19

20 The Dry Lake Valley North SEZ represents one of the more complex cases because of its
21 potential to generate a large amount of solar power. On the basis of its size, the assumption of a
22 minimum of 5 acres (0.02 km²) of land required per MW, and the assumption of a maximum of
23 80% of the land area developed, the Dry Lake Valley North SEZ is estimated to have the
24 potential to generate 4,011 MW of marketable solar power at full build-out.
25
26

27 **11.4.23.1 Identification and Characterization of Load Areas** 28

29 The primary candidates for Dry Lake Valley North SEZ load areas are the major
30 surrounding cities. Figure 11.4.23.1-1 shows the possible load areas for the Dry Lake Valley
31 North SEZ and the estimated portion of their market that could be served by solar generation.
32 Possible load areas for the Dry Lake Valley North SEZ include Phoenix and Tucson, Arizona;
33 Salt Lake City, Utah; Las Vegas and Reno, Nevada; and San Diego, Los Angeles, San Jose,
34 San Francisco, Oakland, and Sacramento, California.
35

36 The two load area groups examined for the Dry Lake Valley North SEZ are as follows:
37

- 38 1. Los Angeles, California; and
- 39 2. Reno, Nevada; Sacramento, Oakland, San Francisco, and San Jose, California;
40 Salt Lake City, Utah; and Phoenix, Arizona.
41
42

43 Figure 11.4.23.1-2 shows the most economically viable load groups and transmission
44 scheme for the Dry Lake Valley North SEZ (transmission scheme 1), and Figure 11.4.23.1-3
45 shows an alternative transmission scheme (transmission scheme 2) that represents a logical
46 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.



1
2 **FIGURE 11.4.23.1-2 Transmission Scheme 1 for the Proposed Dry Lake Valley**
3 **North SEZ (Source for background map: Platts 2011)**
4
5

6 Figures 11.4.23.1-2 and 11.4.23.1-3 display the pathways that new dedicated lines might
7 follow to distribute solar power generated at the Dry Lake Valley North SEZ via the two
8 identified transmission schemes described in Table 11.4.23.1-1. These pathways parallel existing
9 500-kV, 345-kV, and/or lower voltage lines. The intent of following existing lines is to avoid
10 pathways that may be infeasible due to topographical limitations or other concerns.
11

12 For transmission scheme 1, a new line would be constructed to connect with Los Angeles
13 (6,400 MW), so that the 4,011-MW output of the Dry Lake Valley North SEZ could be fully
14 utilized (Figure 11.4.23.1-2). This particular scheme has three segments. The first segment
15 extends about 9 mi (14 km) from the SEZ to the first switching station. On the basis of
16 engineering and operational considerations, this segment would require a double-circuit 765-kV
17 (2–765 kV) bundle of four conductors (Bof4) transmission line design. The second segment is
18 about 111 mi (179 km) long and runs from the first switching station to the second switching
19 station located in Las Vegas. The third and final segment goes to Los Angeles, traversing a
20 distance of about 280 mi (451 km). In general, the transmission configuration options were
21 determined by using the line “loadability” curve provided in American Electric Power’s
22 *Transmission Facts* (AEP 2010). Appendix G documents the line options used for this analysis
23 and describes how the load area groupings were determined.
24



1
2 **FIGURE 11.4.23.1-3 Transmission Scheme 2 for the Proposed Dry Lake Valley**
3 **North SEZ (Source for background map: Platts 2011)**
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6 For transmission scheme 2, serving load centers to the northwest, northeast, and
7 southwest, Figure 11.4.23.1-3 shows that new lines would be constructed to the northwest to
8 connect with Reno (213 MW), Sacramento (1,075 MW), San Francisco (400 MW), Oakland
9 (195 MW), and San Jose (480 MW), so that the 4,011-MW output of the Dry Lake Valley North
10 SEZ could be fully utilized. This scheme would also require construction of a new line extending
11 from Las Vegas to the southeast to Phoenix and another new line to the northeast to Salt Lake
12 City. This scheme has a total of nine segments. The first segment extends 9 mi (14 km) from the
13 SEZ to the first switching station. On the basis of engineering and operational considerations,
14 this segment would require a double-circuit 765-kV (2–765 kV) line with a bundle of four (Bof4)
15 conductors transmission line design. The second segment is about 111 mi (179 km) long and
16 runs from the first switching station to the second switching station located in Las Vegas. This
17 segment would likewise require a double-circuit 765-kV line (2–765 kV) with a bundle of four
18 conductors. The third segment extends to the northwest from Las Vegas to Reno over a distance
19 of 385 mi (620 km). A line configuration consisting of a double-circuit, 765-kV bundle of four
20 is required for this segment. The fourth segment goes from Reno 104 mi (167 km) to the third
21 switching station near Sacramento. This segment would have a line design consisting of a
22 double-circuit 500-kV (2–500kV) line with a bundle of three (Bof3) conductors. The fifth
23 segment extends 23 mi (37 km) and joins the switching station with Sacramento. This segment
24 would require a double-circuit 345-kV (2–345 kV) line with a bundle of two conductors. The
25 sixth, seventh, and eighth segments extend to serve the cities of Oakland, San Francisco, and

1 **TABLE 11.4.23.1-1 Candidate Load Area Characteristics for the Proposed Dry Lake**
 2 **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).

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 5 San Jose, over distances of 98 mi (158 km), 12 mi (19 km), and 40 mi (64 km), respectively.
 6 The required configuration would be 2–345 kV Bof2, 1–345 kV Bof2, and 1–345 kV Bof2,
 7 respectively. The ninth segment connects with Salt Lake City, covering a distance of about
 8 387 mi (623 km), and uses a 1–230 kV Bof1 configuration. The tenth and final segment goes to
 9 Phoenix from Las Vegas, traversing a distance of about 294 mi (473 km). This segment would
 10 require a 2–345 kV Bof2 line configuration.

11
 12 Table 11.4.23.2-1 summarizes the distances to the various load areas over which new
 13 transmission lines would need to be constructed, as well as the assumed number of substations
 14 that would be required. One substation is assumed to be installed at each load area and an
 15 additional one at the SEZ. Thus, in general, the total number of substations per scheme is simply
 16 equal to the number of load areas associated with the scheme plus one. Substations at the load
 17 areas would consist of one or more step-down transformers, while the originating substation at
 18 the SEZ would consist of several step-up transformers. The originating substation would have a
 19 rating of at least 4,011 MW (to match the plant’s output), while the combined load substations
 20 would have a similar total rating of 4,011 MW. For schemes that require branching of the lines,
 21 a switching substation is assumed to be constructed at the appropriate junction. In general,
 22 switching stations carry no local load but are assumed to be equipped with switching gears
 23 (e.g., circuit breakers and connecting switches) to reroute power as well as, in some cases, with
 24 additional equipment to regulate voltage.

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 26

1 **TABLE 11.4.23.2-1 Potential Transmission Schemes, Estimated Solar Markets, and Distances to**
 2 **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.

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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 km²) 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 km²).

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

1 **TABLE 11.4.23.2-2 Comparison of the Various Transmission Line Configurations with Respect to**
 2 **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 km², multiply by 0.004047.

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

7

8 Table 11.4.23.2-4 shows the effect of varying the value of the utilization factor on the
 9 NPV of the transmission schemes. It also shows that as the utilization factor is increased, the
 10 economic viability of the lines also increases. Utilization factors can be raised by allowing the
 11 new dedicated lines to market other power generation outputs in the region in addition to that of
 12 its associated SEZ.

13

14 The findings of the DLT analysis for the proposed Dry Lake Valley North SEZ are as
 15 follows:

16

- 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 km²).

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- 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 km²).

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1 **TABLE 11.4.23.2-3 Comparison of Potential Transmission Lines with Respect to NPV (Base Case)**
 2 **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.

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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.

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- 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 km²) 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

1 mining within the SEZ, and there are no known locatable mineral deposits within the land
2 withdrawal area. According to the LR2000 (accessed in May 2012), there are no recorded mining
3 claims within the land withdrawal area.
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5 Although the mineral potential of the lands within the Dry Lake Valley North SEZ is low,
6 the proposed withdrawal of lands within the SEZ would preclude many types of mining activity
7 over a 20-year period, resulting in the avoidance of potential mining-related impacts. Impacts
8 commonly related to mining development include increased soil erosion and sedimentation,
9 water use, generation of contaminated water in need of treatment, creation of lagoons and ponds
10 (hazardous to wildlife), toxic runoff, air pollution, establishment of noxious weeds and invasive
11 species, habitat destruction or fragmentation, disturbance of wildlife, blockage of migration
12 corridors, increased visual contrast, noise, destruction of cultural artifacts and fossils and/or their
13 context, disruption of landscapes and sacred places of interest to tribes, increased traffic and
14 related emissions, and conflicts with other land uses (e.g., recreational).
15

16 **11.4.25 References**

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19 *Note to Reader:* This list of references identifies Web pages and associated URLs where
20 reference data were obtained for the analyses presented in this Final Solar PEIS. It is likely that
21 at the time of publication of this Final Solar PEIS, some of these Web pages may no longer be
22 available or the URL addresses may have changed. The original information has been retained
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1 **11.4.26 Errata for the Proposed Dry Lake Valley North SEZ**
2

3 This section presents corrections to material presented in the Draft Solar PEIS and the
4 Supplement to the Draft. The need for these corrections was identified in several ways: through
5 comments received on the Draft Solar PEIS and the Supplement to the Draft (and verified by the
6 authors), through new information obtained by the authors subsequent to publication of the Draft
7 Solar PEIS and Supplement to the Draft, or through additional review of the original material by
8 the authors. Table 11.4.26-1 provides corrections to information presented in the Draft Solar
9 PEIS and the Supplement to the Draft.
10
11

1 **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**
2 **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 m ³ /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: <i>Clark, Lincoln, and White Pine Counties Groundwater Development Project.</i> 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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1 **11.5 EAST MORMON MOUNTAIN**
2

3 As stated at the beginning of this chapter, the East Mormon Mountain SEZ was dropped
4 from further consideration through the Supplement to the Draft Solar PEIS. This section presents
5 the information (with minor updates) provided in Appendix B of the Supplement to the Draft
6 Solar PEIS on the rationale for dropping this SEZ.
7

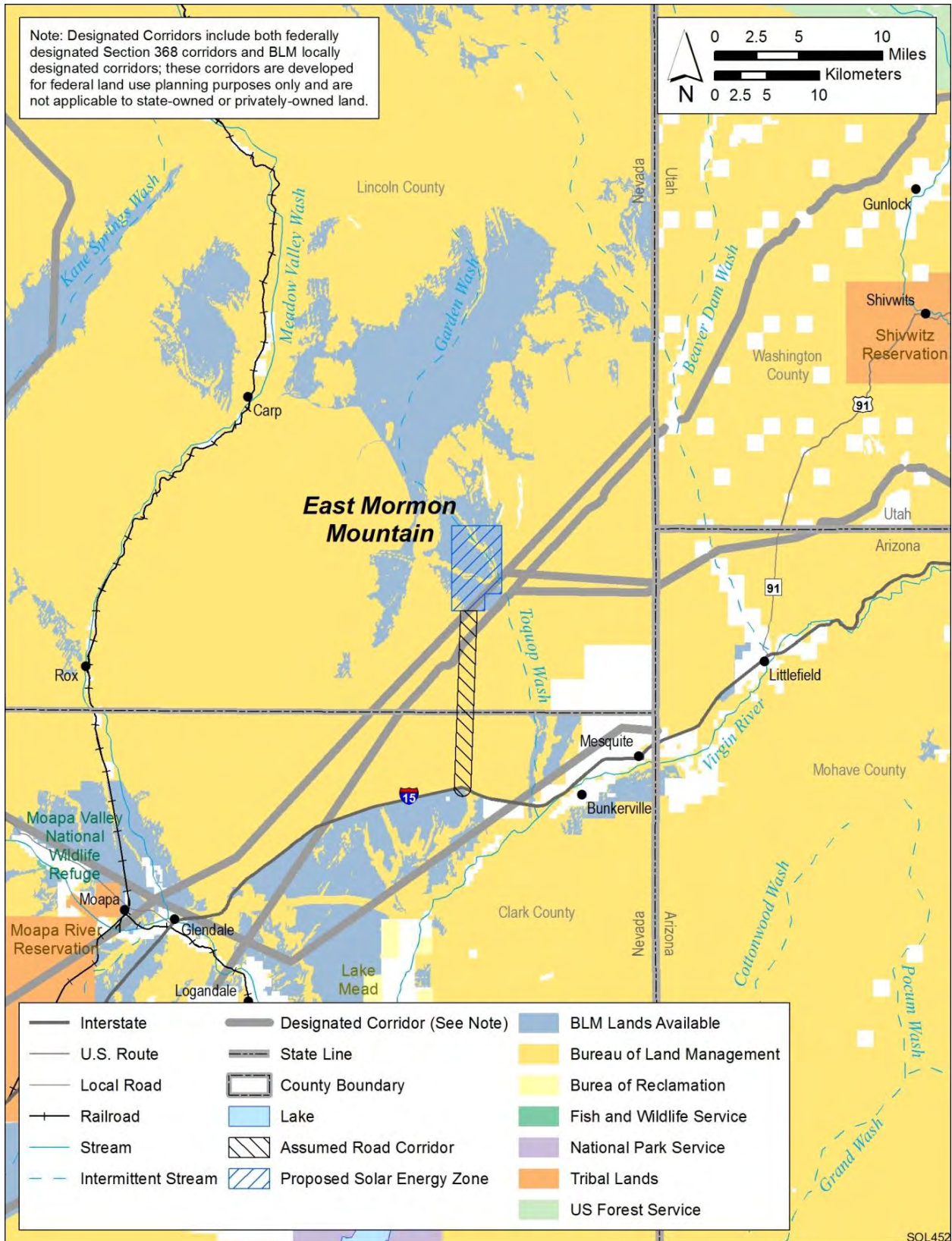
8
9 **11.5.1 Summary of Potential Impacts Identified in the Draft Solar PEIS**
10

11 The proposed East Mormon Mountain SEZ, as presented in the Draft Solar PEIS, had a
12 total area of 8,968 acres (36 km²). It is located in Lincoln County in southern Nevada
13 (Figure 11.5.1-1). The nearest towns are the cities of Mesquite and Bunkerville, approximately
14 13 mi (21 km) southeast and south-southeast of the SEZ, respectively.
15

16 The Draft Solar PEIS also identified I-15, about 11 mi (18 km) southeast of the SEZ, as
17 the nearest major road and assumed that a new access road would be constructed from the
18 proposed SEZ to I-15 to support development.
19

20 Potential environmental and other impacts identified in the Draft Solar PEIS included the
21 following:
22

- 23 • Solar development could sever existing roads and trails that access the SEZ
24 and make it difficult to access undeveloped public lands within and to the
25 west of the SEZ.
26
- 27 • Visual impacts of solar energy development would have the potential to affect
28 wilderness characteristics of the Mormon Mountains WA. A new access road
29 would pass through the Mormon Mountain ACEC, causing fragmentation of
30 the ACEC.
31
- 32 • If full solar development would occur in the SEZ, the Gourd Springs
33 allotment would be reduced in area by about 9.1%. Because the SEZ would
34 occupy the best grazing land in the allotment, it is likely that the grazing
35 operation would become economically infeasible and all 3,458 AUMs
36 currently authorized would be lost.
37
- 38 • There may be some loss of wilderness recreational opportunities in up to 9.7%
39 of the Mormon Mountains WA.
40
- 41 • The DoD indicated that solar technologies with structures higher than 200 ft
42 (61 m) would intrude into military airspace and would present safety concerns
43 for military aircraft.



1

2 **FIGURE 11.5.1-1 Proposed East Mormon Mountain SEZ as Presented in the Draft Solar PEIS**

- 1 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
2 erosion by wind and runoff, sedimentation, and soil contamination) could
3 occur.
- 4
- 5 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
6 wet-cooling options would not be feasible.
- 7
- 8 • Clearing of a large portion of the proposed SEZ could primarily affect playa
9 habitats, riparian habitats, desert dry washes, or other intermittently flooded
10 areas within or downgradient from solar projects, depending on the amount of
11 habitat disturbed. The establishment of noxious weeds could result in habitat
12 degradation. Deposition of fugitive dust could cause reduced productivity or
13 changes in plant community structure.
- 14
- 15 • Potentially suitable habitat for 32 special status species occurs in the affected
16 area of the proposed SEZ; less than 1.0% of the potentially suitable habitat for
17 any of these species and any wildlife species occurs in the region that would
18 be directly affected by development.
- 19
- 20 • If aquatic biota are present, they could be affected by the direct removal of
21 surface water features within the construction footprint, a decline in habitat
22 quantity and quality due to water withdrawals and changes in drainage
23 patterns, as well as increased sediment and contaminant inputs associated with
24 ground disturbance and construction activities.
- 25
- 26 • Temporary exceedances of ambient air quality standards for particulate matter
27 at the SEZ boundaries are possible during construction. These high
28 concentrations, however, would be limited to the immediate area surrounding
29 the SEZ boundary.
- 30
- 31 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
32 could be observed by visitors to the Mormon Mountains WA.
- 33
- 34 • Few, if any, impacts on significant paleontological resources are likely to
35 occur in the proposed SEZ. Areas near Toquop Wash and South Fork have
36 considerable potential for containing significant sites; thus, direct impacts on
37 significant cultural resources could occur in the proposed SEZ. Visual impacts
38 on the Old Spanish National Historic Trail are possible, as well as visual and
39 auditory effects on nearby rock art sites. The proposed SEZ does include
40 plants and animals traditionally important to Native Americans.
- 41
- 42

43 **11.5.2 Summary of Comments Received**

44

45 Most of the comments received on the proposed East Mormon Mountain SEZ were in
46 favor of eliminating the area as an SEZ (N-4 State Grazing Board; Lincoln County, Nevada; and

1 the WWP). However, the Nevada Wilderness Project and The Wilderness Society et al.¹
2 supported designating the area as an SEZ. Many comments expressed concern for ranching
3 operations in the area and the effect of solar development in the proposed SEZ on grazing
4 allotments in the area.

5
6 The DoD recommended that any solar energy technologies that require structures higher
7 than 700 ft (1,127 m) AGL receive additional analysis. Lincoln County opposed designation of
8 the East Mormon Mountain as an SEZ because of its potential adverse impacts on the Mormon
9 Mesa ACEC, especially designated lands with wilderness characteristics and designated by
10 Congress, livestock grazing, recreation, DoD operating areas, sensitive soil, water and vegetation
11 resources, designated critical habitat for federally endangered species, and visual resource
12 values.

13
14 The WWP recommended eliminating the East Mormon Mountain as an SEZ, because it
15 includes desert tortoise habitat and is immediately adjacent to the Mormon Mesa Desert Wildlife
16 Management Area (DWMA) and the Beaver Dam Slope DWMA in the Northeastern Mojave
17 recovery unit. The Nature Conservancy recommended avoiding the Toquop Wash, because it is a
18 regionally important desert wash containing many of the Mojave Desert ecoregionally significant
19 plant and animal species.

20
21 An ethnographic study for the proposed East Mormon Mountain SEZ area was recently
22 conducted (SWCA and University of Arizona 2011), and a summary of that study was presented
23 in the Supplement to the Draft Solar PEIS. The agencies value the information shared by the
24 tribes during the ethnographic study and will consider their input in striving to minimize the
25 impacts of solar development. The completed ethnographic study is available in its entirety on
26 the Solar PEIS Web site (<http://solareis.anl.gov>).

27 28 29 **11.5.3 Rationale for Eliminating the SEZ**

30
31 On the basis of public comments received on the Draft Solar PEIS, review by the BLM,
32 and continued review of potential impacts identified in the Draft Solar PEIS, the East Mormon
33 Mountain SEZ was eliminated from further consideration and will not be identified as an SEZ in
34 applicable land use plans. The potential impacts from solar development in the proposed East
35 Mormon Mountain SEZ were considered sufficient reason to eliminate the area from further
36 consideration.

37
38 Although the area has been dropped from consideration as an SEZ, the lands that
39 composed the proposed East Mormon Mountain SEZ will be retained as solar ROW variance
40 areas, because the BLM expects that individual projects could be sited in this area to avoid

¹ The Wilderness Society, Center for Biological Diversity, Defenders of Wildlife, Sierra Club–Toiyabe Chapter, National Parks Conservation Association, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed Nevada SEZs. Those comments are attributed to The Wilderness Society et al.

1 and/or minimize impacts. Any solar development within this area in the future would require
2 appropriate environmental analysis.

3
4
5 **11.5.4 References**
6

7 *Note to Reader:* This list of references identifies Web pages and associated URLs where
8 reference data were obtained for the analyses presented in this Final Solar PEIS. It is likely that
9 at the time of publication of this Final Solar PEIS, some of these Web pages may no longer be
10 available or their URL addresses may have changed. The original information has been retained
11 and is available through the Public Information Docket for this Final Solar PEIS.
12

13 SWCA and University of Arizona (SWCA Environmental Consultants and Bureau of Applied
14 Research in Anthropology), 2011, *Ethnographic and Class I Records Searches for Proposed*
15 *Solar Energy Zones in California, Nevada, and Utah for the Bureau of Land Management's*
16 *Solar Programmatic Environmental Impact Statement*, prepared by SWCA Environmental
17 Consultants, Albuquerque, N.M., and Bureau of Applied Research in Anthropology, University
18 of Arizona, Tucson, Ariz., Dec.
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1 **11.6 GOLD POINT**

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4 **11.6.1 Background and Summary of Impacts**

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6
7 **11.6.1.1 General Information**

8
9 The proposed Gold Point SEZ is located in Esmeralda County in southwestern Nevada.
10 In 2008, the county population was 664, while adjacent Nye County to the east had a population
11 of 44,175. No incorporated towns are in close proximity to the SEZ. The nearest residences are
12 in Gold Point, a well-preserved ghost town and point of interest for tourists about 2 mi (3.2 km)
13 south of the SEZ. The town is located on BLM-administered lands; it thrived in the early 1900s,
14 but most of the town was abandoned in the 1940s when mining operations ceased. The town
15 currently has only a few occupied residences. The town of Tonopah is approximately 50 mi
16 (80 km) to the north of the SEZ.

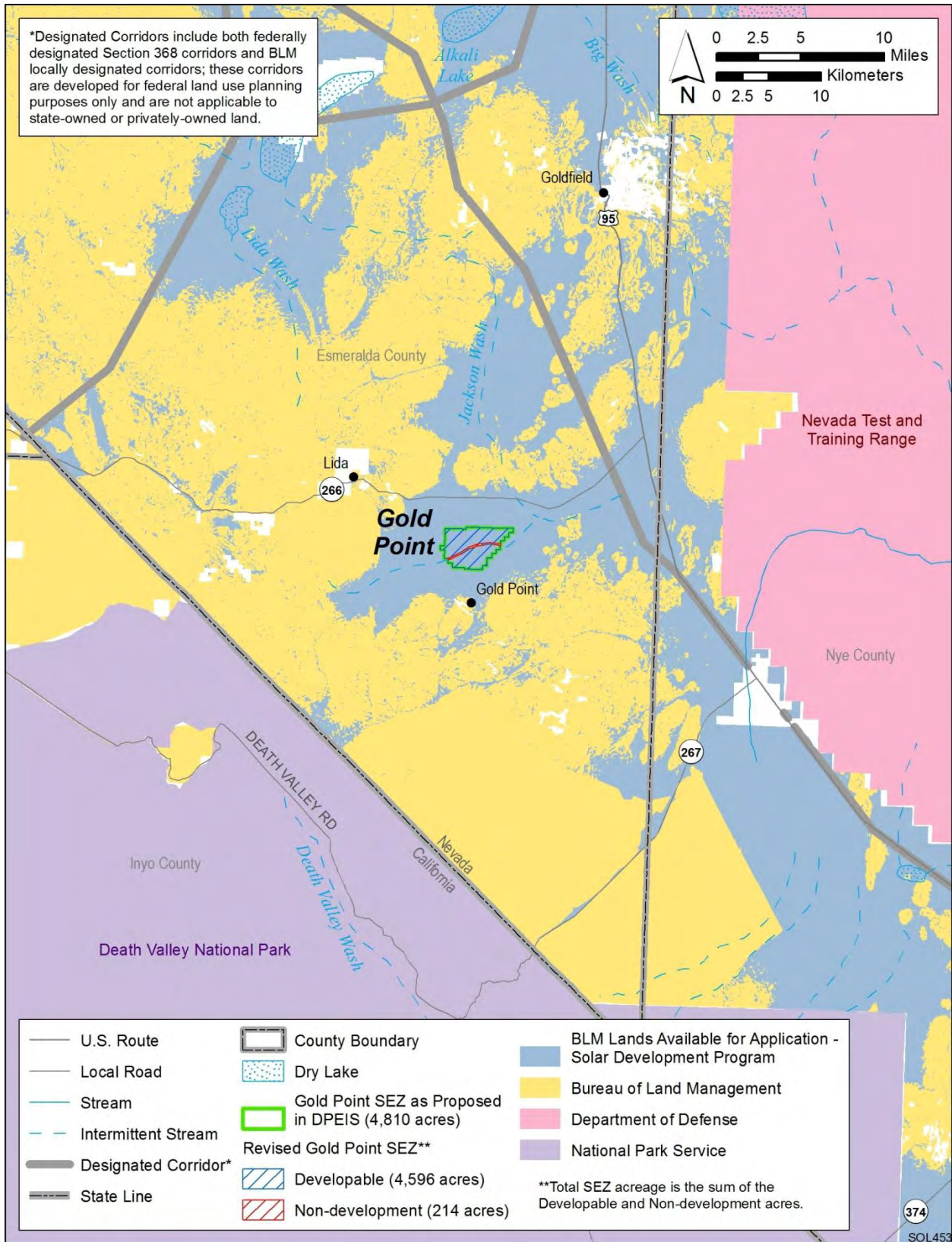
17
18 The nearest major road access to the proposed Gold Point SEZ is State Route 774, which
19 parallels the eastern edge of the SEZ; U.S. 95 runs north–south as it passes within 9 mi (14 km)
20 to the east of the SEZ. The UP Railroad serves the region; the closest stop is in Thorne, 160 mi
21 (257 km) northwest of the SEZ. As of October 28, 2011, there were no pending solar
22 applications within or adjacent to the SEZ.

23
24 As published in the Draft Solar PEIS (BLM and DOE 2010), the proposed Gold Point
25 SEZ had a total area of 4,810 acres (19 km²). In the Supplement to the Draft Solar PEIS
26 (BLM and DOE 2011), no boundary revisions were identified for the proposed SEZ (see
27 Figure 11.6.1.1-1). However, areas specified for non-development were mapped where data were
28 available. For the proposed Gold Point SEZ, 214 acres (0.87 km²) along a significant unnamed
29 intermittent stream passing from west to east through the center of the SEZ was identified as a
30 non-development area (see Figure 11.6.1.1-2). The remaining developable area within the SEZ is
31 4,596 acres (18.6 km²).

32
33 The analyses in the following sections update the affected environment and potential
34 environmental, cultural, and socioeconomic impacts associated with utility-scale solar energy
35 development in the proposed Gold Point SEZ as described in the Draft Solar PEIS.

36
37
38 **11.6.1.2 Development Assumptions for the Impact Analysis**

39
40 Maximum solar development of the Gold Point SEZ was assumed to be 80% of the SEZ
41 area over a period of 20 years, a maximum of 3,677 acres (15 km²) (Table 11.6.1.2-1). Full
42 development of the Gold Point SEZ would allow development of facilities with an estimated
43 total of between 409 MW (power tower, dish engine, or PV technologies, 9 acres/MW
44 [0.04 km²/MW]) and 735 MW (solar trough technologies, 5 acres/MW [0.02 km²/MW]) of
45 electrical power capacity.



1

2 **FIGURE 11.6.1.1-1 Proposed Gold Point SEZ as Revised**

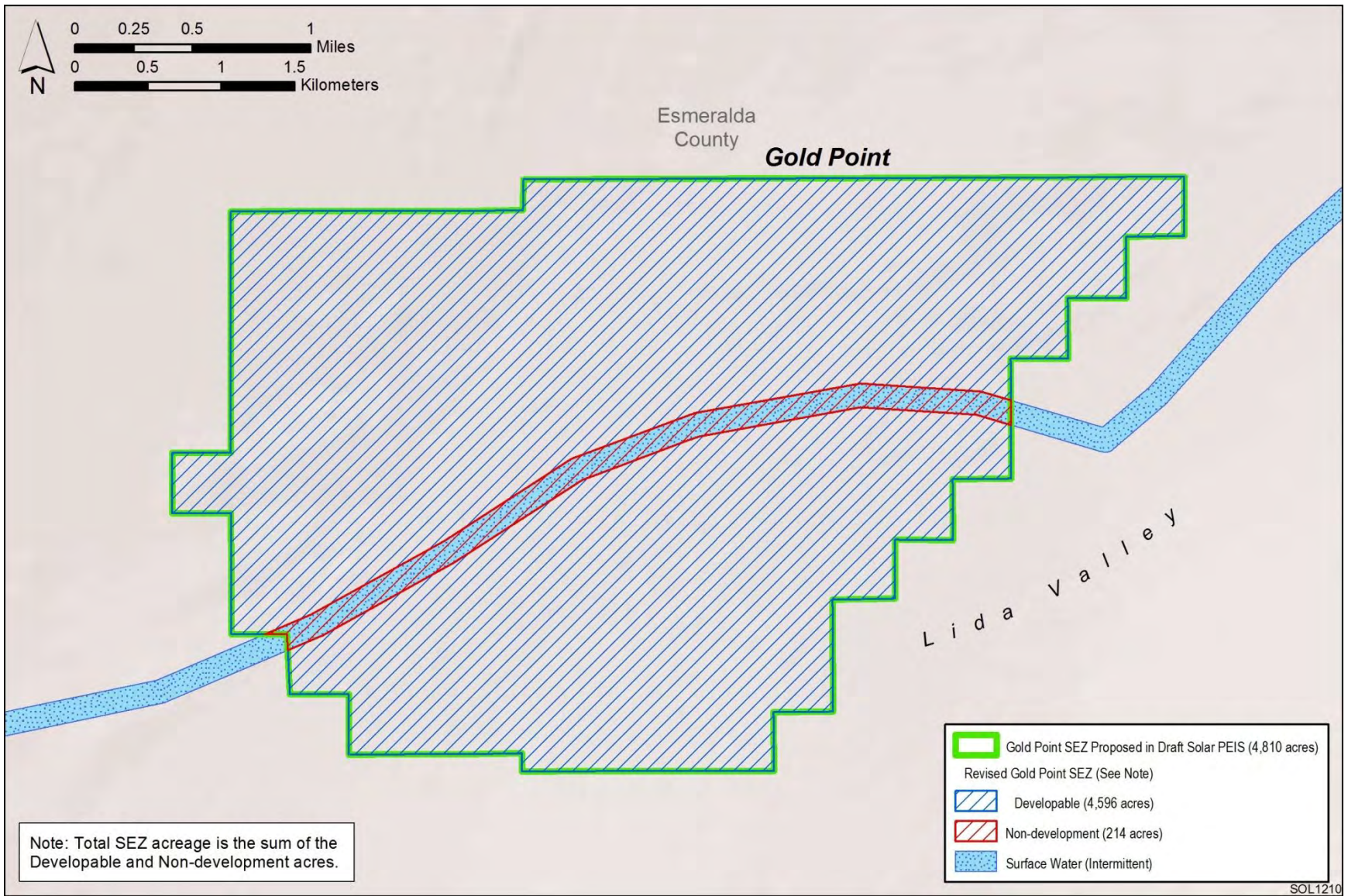


FIGURE 11.6.1.1-2 Developable and Non-development Areas for the Proposed Gold Point SEZ as Revised

1 **TABLE 11.6.1.2-1 Assumed Development Acreages, Solar MW Output, and Nearest Major**
 2 **Road and Transmission Line for the Proposed Gold Point 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 ^e	Area of Assumed Road ROW	Distance to Nearest Designated Corridor ^f
4,596 acres ^a and 3,677 acres	409 MW ^b and 735 MW ^c	State Route 774 0 mi ^d	3 mi and 345 kV	0 acres	6 mi

- a To convert acres to km², 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 km²/MW) of land required.
- c Maximum power output if the SEZ were fully developed using solar trough technologies, assuming 5 acres/MW (0.02 km²/MW) of land required.
- d To convert mi to km, multiply by 1.6093.
- e In the Draft Solar PEIS, the nearest transmission line identified was a 120-kV line 22 mi (35 km) from the SEZ; this information has been updated.
- f BLM-designated corridors are developed for federal land use planning purposes only and are not applicable to state-owned or privately owned land.

3
 4
 5 Availability of transmission from SEZs to load centers will be an important consideration
 6 for future development in SEZs. For the proposed Gold Point SEZ, updated data indicate that the
 7 nearest existing transmission line is a 345-kV north–south line located about 3 mi (5 km) east of
 8 the SEZ (the Draft Solar PEIS had indicated that the closest existing line was a 120-kV line
 9 22 mi [35 km] to the west of the SEZ). It is possible that a new transmission line could be
 10 constructed from the SEZ to the existing line, but the capacity of the line could be inadequate
 11 for the possible 428 to 770 MW of new capacity. Therefore, at full build-out capacity, new
 12 transmission lines and/or upgrades of existing transmission lines would be required to bring
 13 electricity from the proposed Gold Point SEZ to load centers. An assessment of the most likely
 14 load center destinations for power generated at the Gold Point SEZ and a general assessment of
 15 the impacts of constructing and operating new transmission facilities to those load centers are
 16 provided in Section 11.6.23. In addition, the generic impacts of transmission lines and associated
 17 infrastructure construction and of line upgrades for various resources are discussed in Chapter 5
 18 of this Final Solar PEIS. Project-specific analyses would also be required to identify the specific
 19 impacts of new transmission construction and line upgrades for any projects proposed within the
 20 SEZ.

21
 22 The updated transmission assessment for the Gold Point SEZ no longer evaluates the
 23 specifically located hypothetical transmission corridor assessed in the Draft Solar PEIS because
 24 the actual location of such a tie-in line is unknown. For this Final Solar PEIS, the 667 acres
 25 (2.7 km²) of land disturbance for a hypothetical transmission corridor to an existing transmission

1 line is no longer assumed (although the impacts of required new transmission overall are
2 addressed in Section 11.6.23).

3
4 For the proposed Gold Point SEZ, existing road access should be adequate to support
5 construction and operation of solar facilities, because State Route 774 runs along the eastern
6 border of the SEZ. Thus, no additional road construction outside of the SEZ is assumed to be
7 required to support solar development, as summarized in Table 11.6.1.2-1.
8
9

10 **11.6.1.3 Programmatic and SEZ-Specific Design Features**

11
12 The proposed programmatic design features for each resource area to be required under
13 the BLM Solar Energy Program are presented in Section A.2.2 of Appendix A of this Final Solar
14 PEIS. These programmatic design features are intended to avoid, minimize, and/or mitigate
15 adverse impacts from solar energy development and will be required for development on all
16 BLM-administered lands, including SEZ and non-SEZ lands.
17

18 The discussions below addressing potential impacts of solar energy development on
19 specific resource areas (Sections 11.6.2 through 11.6.22) also provide an assessment of the
20 effectiveness of the programmatic design features in mitigating adverse impacts from solar
21 development within the SEZ. SEZ-specific design features to address impacts specific to the
22 proposed Gold Point SEZ may be required in addition to the programmatic design features. The
23 proposed SEZ-specific design features for the Gold Point SEZ have been updated on the basis of
24 revisions to the SEZ since the Draft Solar PEIS (such as boundary changes and the identification
25 of non-development areas) and on the basis of comments received on the Draft and Supplement
26 to the Draft Solar PEIS. All applicable SEZ-specific design features identified to date (including
27 those from the Draft Solar PEIS that are still applicable) are presented in Sections 11.6.2 through
28 11.6.22.
29
30

31 **11.6.2 Lands and Realty**

32 **11.6.2.1 Affected Environment**

33
34
35
36 The exterior boundary of the proposed SEZ remains the same as that in the Draft Solar
37 PEIS. Within the boundary of the proposed Gold Point SEZ, about 214 acres (0.87 km²) along an
38 intermittent stream has been identified as a non-development area. As stated in the Draft Solar
39 PEIS, the area of the SEZ is isolated, and the land is undeveloped with only a few dirt roads
40 present. A 345-kV transmission line 3 mi (5 km) east of the SEZ has now been identified as the
41 closest existing transmission line to the SEZ.
42
43

44 **11.6.2.2 Impacts**

45
46 The description of impacts in the Draft Solar PEIS remains the same with the exception
47 of the classification of land along the intermittent stream as a non-development area. The major

1 impact of the proposed SEZ on lands and realty activities is still that it would establish an
2 isolated industrial area in an otherwise rural and undeveloped setting area and would exclude
3 other existing and potential uses of the land. Because the SEZ is undeveloped and isolated,
4 utility-scale solar energy development would be a new and highly discordant land use to the area.
5
6

7 **11.6.2.3 SEZ-Specific Design Features and Design Feature Effectiveness**

8

9 Required programmatic design features that would reduce impacts on lands and realty
10 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
11 programmatic design features will provide some mitigation for the identified impacts but will not
12 mitigate all adverse impacts. For example, impacts related to the exclusion of many existing and
13 potential uses of the public land; the visual impact of an industrial-type solar facility within an
14 otherwise rural area; and induced land use changes, if any, on nearby or adjacent state and
15 private lands may not be fully mitigated.
16

17 No SEZ-specific design features for lands and realty have been identified through this
18 Final Solar PEIS. Some SEZ-specific design features may be established for parcels within the
19 Gold Point SEZ through the process of preparing parcels for competitive offer and subsequent
20 project-specific analysis.
21
22

23 **11.6.3 Specially Designated Areas and Lands with Wilderness Characteristics**

24
25

26 **11.6.3.1 Affected Environment**

27

28 As described in the Draft Solar PEIS, there are 6 specially designated areas within 25 mi
29 of the proposed Gold Point SEZ that potentially could be affected by solar development in the
30 SEZ: Death Valley NP, California Desert National Conservation Area, Death Valley WA, the
31 Pigeon Spring and Queer Mountain WSAs, and the Fish Lake Valley SRMA.
32
33

34 **11.6.3.2 Impacts**

35

36 The description in the Draft Solar PEIS remains valid with the exception noted in the
37 following paragraph. It is anticipated there would be no to minimal impact on specially
38 designated areas near the SEZ.
39

40 In the Summary Impacts Table, Table 11.6.1.3-1 of the Draft Solar PEIS, in the column
41 titled Environmental Impacts and the row for Specially Designated Areas and Lands with
42 Wilderness Characteristics, a potential adverse impact on night sky viewing was included.
43 Further review of the night sky issue indicates that there is not likely to be an adverse impact.
44 The rationale for this is the distance between the proposed Gold Point SEZ and the specially
45 designated areas, and the anticipated effectiveness of the programmatic design feature included
46 in Section A.2.2.1.13.1 of Appendix A of this Final Solar PEIS.

1 **11.6.3.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on specially
4 designated areas are described in Section A.2.2 of Appendix A of this Final Solar PEIS
5 (design features for both specially designated areas and visual resources would address
6 impacts). Implementing the programmatic design features will provide some mitigation for
7 the identified impacts.
8

9 No SEZ-specific design features for specially designated areas have been identified
10 through this Final Solar PEIS. Some SEZ-specific design features may be identified through the
11 process of preparing parcels for competitive offer and subsequent project-specific analysis.
12

13
14 **11.6.4 Rangeland Resources**

15
16
17 **11.6.4.1 Livestock Grazing**
18

19
20 ***11.6.4.1.1 Affected Environment***
21

22 One grazing allotment (the Magruder Mountain allotment) overlaps the proposed Gold
23 Point SEZ, but only 0.7% of the allotment is within the SEZ.
24

25
26 ***11.6.4.1.2 Impacts***
27

28 The conclusion in the Draft Solar PEIS that because less than 1% of the Magruder
29 allotment overlaps the proposed SEZ there would be no impact on overall grazing use in the
30 allotment is still applicable. Any cattle use displaced from the SEZ likely would be absorbed
31 elsewhere in the allotment.
32

33
34 ***11.6.4.1.3 SEZ-Specific Design Features and Design Feature Effectiveness***
35

36 Required programmatic design features that would reduce impacts on livestock grazing
37 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
38 programmatic design features will provide some mitigation for any impacts.
39

40 No SEZ-specific design features to protect livestock grazing have been identified in this
41 Final Solar PEIS. Some SEZ-specific design features may be identified through the process of
42 preparing parcels for competitive offer and subsequent project-specific analysis.
43
44
45

1 **11.6.4.2 Wild Horses and Burros**

2
3
4 ***11.6.4.2.1 Affected Environment***

5
6 As presented in Section 11.6.4.2.1 of the Draft Solar PEIS, no wild horse or burro HMAs
7 occur within the proposed Gold Point SEZ or in close proximity to it.
8

9
10 ***11.6.4.2.2 Impacts***

11
12 As presented in the Draft Solar PEIS, solar energy development within the proposed Gold
13 Point SEZ would not directly affect wild horses and burros.
14

15
16 ***11.6.4.2.3 SEZ-Specific Design Features and Design Feature Effectiveness***

17
18 Because solar energy development within the proposed Gold Point SEZ would not affect
19 wild horses and burros, no SEZ-specific design features to address wild horses and burros have
20 been identified in this Final Solar PEIS.
21

22
23 **11.6.5 Recreation**

24
25
26 **11.6.5.1 Affected Environment**

27
28 The description of the area within and around the proposed Gold Point SEZ in the
29 Draft Solar PEIS remains valid. The overall appearance of the site is uniform and somewhat
30 monotonous, and it is believed that the area receives no significant recreational use.
31

32
33 **11.6.5.2 Impacts**

34
35 Although recreational use would be excluded from areas developed for solar energy
36 production, the current level of use within the SEZ is so small that any loss of use would be
37 insignificant.
38

39 In addition, lands that are outside of the proposed SEZ may be acquired or managed for
40 mitigation of impacts on other resources (e.g., sensitive species). Managing these lands for
41 mitigation could further exclude or restrict recreational use, potentially leading to additional
42 losses in recreational opportunities in the region. The impact of acquisition and management of
43 mitigation lands would be considered as a part of the environmental analysis of specific solar
44 energy projects.
45

1 **11.6.5.3 SEZ-Specific Design Features and Design Feature Effectiveness**

2
3 Required programmatic design features that would reduce impacts on recreational
4 resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing
5 the programmatic design features will provide adequate mitigation for the identified impacts.
6

7 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
8 comments received as applicable, no SEZ-specific design features to address recreation impacts
9 have been identified. Some SEZ-specific design features may be identified through the process
10 of preparing parcels for competitive offer and subsequent project-specific analysis.
11

12
13 **11.6.6 Military and Civilian Aviation**

14
15
16 **11.6.6.1 Affected Environment**

17
18 The description in the Draft Solar PEIS remains valid. The proposed Gold Point SEZ is
19 located under numerous MTRs and between two SUAs. The closest airport is the small BLM
20 Lida Junction Airport, located about 10 mi (16 km) from the SEZ.
21

22
23 **11.6.6.2 Impacts**

24
25 Impacts described in the Draft Solar PEIS remain valid and have been updated with
26 additional input from the DoD. Impacts include the following:
27

- 28 • Solar development could encroach into MTR airspace that crosses the
29 SEZ; structures higher than 50 ft (15 m) AGL may present unacceptable
30 electromagnetic compatibility concerns for the NTTR test mission.
31
32 • Light from solar facilities could affect DoD nighttime operations.
33

34 Through comments on the Draft Solar PEIS and the Supplement to the Draft, the DoD
35 expressed concern for solar energy facilities that might affect military test and training
36 operations. The DoD requested that the technology at the proposed Gold Point SEZ be restricted
37 to low-profile, low-glare PV technologies under 50-ft (15-m) AGL, similar to the PV I Array at
38 Nellis Air Force Base.
39

40
41 **11.6.6.3 SEZ-Specific Design Features and Design Feature Effectiveness**

42
43 Required programmatic design features that would reduce impacts on military and
44 civilian aviation are described in Section A.2.2 of Appendix A of this Final Solar PEIS. The
45 programmatic design features require early coordination with the DoD to identify and avoid,
46 minimize, and/or mitigate, if possible, potential impacts on the use of military airspace.

1 No SEZ-specific design features to address impacts on military and civilian aviation have
2 been identified in this Final Solar PEIS. Some SEZ-specific design features may be identified
3 through the process of preparing parcels for competitive offer and subsequent project-specific
4 analysis.
5
6

7 **11.6.7 Geologic Setting and Soil Resources**

8
9

10 **11.6.7.1 Affected Environment**

11
12

13 ***11.6.7.1.1 Geologic Setting***

14

15 Data provided in the Draft Solar PEIS remain valid. The boundaries of the proposed SEZ
16 remain the same, but about 214 acres (0.87 km²) of a non-development area encompassing a
17 significant unnamed intermittent stream has now been identified.
18
19

20 ***11.6.7.1.2 Soil Resources***

21

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

- 23 • Table 11.6.7.1-1 provides revised areas for soil map units taking into account
24 non-development areas.
25
26

27 **11.6.7.2 Impacts**

28
29

30 Impacts on soil resources would occur mainly as a result of ground-disturbing activities
31 (e.g., grading, excavating, and drilling), especially during the construction phase of a solar
32 project. Because the developable area of the SEZ has changed by less than 5%, the assessment
33 of impacts provided in the Draft Solar PEIS remains valid, with the following updates:
34

- 35 • Impacts related to wind erodibility are somewhat reduced because the
36 identification of non-development areas eliminates 214 acres (0.87 km²) of
37 moderately erodible soils from development.
38
- 39 • Impacts related to water erodibility are somewhat reduced because the
40 identification of non-development areas eliminates 12 acres (0.05 km²) of
41 moderately erodible soils from development.
42
43

1 **TABLE 11.6.7.1-1 Summary of Soil Map Units within the Proposed Gold Point SEZ as Revised**

Map Unit Symbol ^a	Map Unit Name	Erosion Potential		Description	Area in Acres ^d (percentage of SEZ)
		Water ^b	Wind ^c		
1000	Keefa–Itme Association	Slight (0.20)	Moderate (WEG 3) ^e	Consists of about 70% Keefa sandy loam and 20% Itme gravelly loamy sand. Gently sloping soils on fan skirts, inset fans, and lake plains. Parent material consists of mixed alluvium (including from granitic rocks). Very deep and well drained, with moderate surface runoff potential and moderately rapid permeability. Available water capacity is low. Moderate rutting hazard. Used mainly as rangeland; unsuitable for cultivation.	2,405 (50.0) ^f
482	Stonell–Wardenot–Izo association	Slight (0.05)	Moderate (WEG 5)	Consists of about 35% Stonell very gravelly sandy loam, 30% Wardenot very gravelly sandy loam, and 20% Izo very gravelly sand. Gently sloping soils on fan remnants, inset fans, and drainage ways. Parent material is mixed alluvium. Very deep and excessively drained, with low surface runoff potential (high infiltration rate) and moderately rapid permeability. Available water capacity is low to very low. Slight rutting hazard. Used mainly as rangeland and wildlife habitat; unsuitable for cultivation.	1,077 (22.4)
1033	Papoose–Roic association	Moderate (0.37)	Moderate (WEG 3)	Consists of about 50% Papoose sandy loam and 45% Roic very gravelly loam. Gently to steeply sloping soils on lake terraces, hills, and pediments. Parent material is mixed alluvium and residuum and colluvium from tuffaceous sedimentary rocks. Very deep (Papoose soils) and very shallow (Roic soils over shallow paralithic bedrock) and well drained, with moderate surface runoff potential and moderate permeability. Available water capacity is low to very low. Moderate rutting hazard. Used mainly as rangeland or wildlife habitat; small areas may be irrigated and used for cropland (alfalfa and small grains).	577 (12.0)

TABLE 11.6.7.1-1 (Cont.)

Map Unit Symbol ^a	Map Unit Name	Erosion Potential		Description	Area in Acres ^d (percentage of SEZ)
		Water ^b	Wind ^c		
940	Belted-Keefa association	Slight (0.10)	Moderate (WEG 3)	Consists of about 70% Belted gravelly loamy sand and 20% Keefa sandy loam. Gently to steeply sloping soils on beach terraces and fan skirts. Parent material consists of mixed alluvium. Very deep (Keefa soils) and very shallow (Belted soils over shallow duripan) and well drained, with high surface runoff potential (very slow infiltration rate) and moderate permeability. Available water capacity is low to very low. Moderate rutting hazard. Used mainly as rangeland, forest; unsuitable for cultivation.	451 (9.4) ^e
1031	Papoose sandy loam (0 to 8% slopes)	Moderate (0.37)	Moderate (WEG 3)	Gently sloping soils on lake terraces. Parent material consists of mixed alluvium from tuffs, basalt, and andesite with small amounts of limestone and quartzite. Very deep and well drained, with moderate surface runoff potential and moderately slow permeability. Available water capacity is low. Moderate rutting hazard. Used mainly as rangeland or wildlife habitat; small areas may be irrigated and used for cropland (alfalfa and small grains).	299 (6.2)

^a Map unit symbols are shown in Figure 11.6.7.1-5 of the Draft Solar PEIS.

^b Water erosion potential rates based on soil erosion factor K (whole rock), 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.

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

^d To convert acres to km², multiply by 0.004047.

Footnotes continued on next page.

TABLE 11.6.7.1-1 (Cont.)

^e WEGs are based on soil texture, content of organic matter, effervescence of carbonates, content of rock fragments, and mineralogy, and also take into account soil moisture, surface cover, soil surface roughness, wind velocity and direction, and the length of unsheltered distance (USDA 2004). Groups range in value from 1 (most susceptible to wind erosion) to 8 (least susceptible to wind erosion). The NRCS provides a wind erodibility index, expressed as an erosion rate in tons per acre per year, for each of the wind erodibility groups: WEG 1, 220 tons (200 metric tons) per acre (4,000 m²) per year (average); WEG 2, 134 tons (122 metric tons) per acre (4,000 m²) per year; WEGs 3 and 4 (and 4L), 86 tons (78 metric tons) per acre (0.004 km²) per year; WEG 5, 56 tons (51 metric tons) per acre (0.004 km²) per year; WEG 6, 48 tons (44 metric tons) per acre (4,000 m²) per year; WEG 7, 38 tons (34 metric tons) per acre (4,000 m²) per year; and WEG 8, 0 tons (0 metric tons) per acre (4,000 m²) per year.

^f A total of 202 acres (0.82 km²) within the Keefa–Itme association is currently categorized as a “non-development” area.

^g A total of 12 acres (0.049 km²) within the Belted–Keefa association is currently categorized as a “non-development” area.

Source: NRCS (2010).

1 **11.6.7.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on soils are described
4 in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design
5 features will reduce the potential for soil impacts during all project phases.
6

7 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
8 comments received as applicable, no SEZ-specific design features were identified for soil
9 resources at the proposed Gold Point SEZ. Some SEZ-specific design features may be identified
10 through the process of preparing parcels for competitive offer and subsequent project-specific
11 analysis.
12

13
14 **11.6.8 Minerals (Fluids, Solids, and Geothermal Resources)**
15

16 A mineral potential assessment for the proposed Gold Point SEZ has been prepared and
17 reviewed by BLM mineral specialists knowledgeable about the region where the SEZ is located
18 (BLM 2012). The BLM is proposing to withdraw the SEZ from settlement, sale, location, or
19 entry under the general land laws, including the mining laws, for a period of 20 years (see
20 Section 2.2.2.2.4 of the Final Solar PEIS). The potential impacts of this withdrawal are discussed
21 in Section 11.6.24.
22

23
24 **11.6.8.1 Affected Environment**
25

26 The description in the Draft Solar PEIS remains valid. There are no mining claims
27 located in the proposed Gold Point SEZ (as of September 2010); however, the western half of the
28 SEZ was previously blanketed by both lode and placer claims, which have been closed. There
29 are no active oil and gas leases in the area and no active or historical geothermal development in
30 or near the SEZ.
31

32
33 **11.6.8.2 Impacts**
34

35 The description of the proposed SEZ in the Draft Solar PEIS is still accurate. If identified
36 as an SEZ, it would continue to be closed to all incompatible forms of mineral development.
37 Some future development of oil and gas resources beneath the SEZ would be possible, and
38 production of common minerals could take place in areas not directly developed for solar energy
39 production.
40

41
42 **11.6.8.3 SEZ-Specific Design Features and Design Feature Effectiveness**
43

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

1 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
2 comments received as applicable, no SEZ-specific design features for mineral resources have
3 been identified in this Final Solar PEIS. Some SEZ-specific design features may be identified
4 through the process of preparing parcels for competitive offer and subsequent project-specific
5 analysis.
6

7 8 **11.6.9 Water Resources**

9 10 **11.6.9.1 Affected Environment**

11
12
13 The description of the affected environment given in the Draft Solar PEIS relevant to
14 water resources at the proposed Gold Point SEZ remains valid and is summarized in the
15 following paragraphs.
16

17 The Gold Point SEZ is within the Central Nevada Desert subbasin of the Great Basin
18 hydrologic region. The SEZ is located in the southern portion of Lida Valley and surrounded by
19 Slate Ridge to the south, Mount Jackson Ridge to the north, and Magruder Mountain and the
20 Palmetto Mountains to the northwest. The average precipitation ranges from 3 to 6 in./yr (8 to
21 15 cm/yr), the average snowfall ranges from 6 to 18 in./yr (15 to 46 cm/yr), and the estimated
22 pan evaporation rate is about 97 in./yr (246 cm/yr). No perennial surface water features or
23 wetland areas are present in the SEZ. An unnamed intermittent/ephemeral stream and several
24 washes, which are tributaries of Jackson Wash, drain toward the northeast across the SEZ. Flood
25 hazards have not been identified for the SEZ, but for the adjacent Nye County an identified
26 100-year floodplain has been mapped for Jackson Wash that has a high probability of extending
27 to areas within the SEZ. A total of 214 acres (0.9 km²) along an intermittent/ephemeral tributary
28 of Jackson Wash that cuts through the SEZ has been identified as a non-development area. The
29 Gold Point SEZ is part of the Lida Valley groundwater basin, a basin-fill aquifer covering
30 approximately 342,400 acres (1,386 km²). The basin-fill aquifer consists of three units:
31 consolidated rocks, older alluvium, and younger alluvium, which range in thickness from 500 to
32 2,460 ft (152 to 750 m). Estimates of groundwater recharge to the Lida Valley range from 50 to
33 700 ac-ft/yr (61,700 to 863,400 m³/yr), depth to groundwater is on the order of 300 ft (91 m),
34 and groundwater flows from southwest to northeast in the vicinity of the SEZ. Groundwater
35 quality varies in the Lida Valley, but general impairments include TDS concentrations greater
36 than 500 mg/L and sulfate concentrations greater than 250 mg/L.
37

38 All waters in Nevada are public property, and the NDWR is the agency responsible
39 for managing both surface and groundwater resources. The Lida Valley groundwater basin is
40 not a designated groundwater, thus there are no specific beneficial uses set by the NDWR.
41 The estimate of perennial yield the NDWR uses to set water right limits is 350 ac-ft/yr
42 (431,700 m³/yr) for Lida Valley; current water rights total 76 ac-ft/yr (93,700 m³/yr). Solar
43 energy developers would have to submit applications for new groundwater withdrawals or
44 transfer of existing water rights under the review of the NDWR.
45

1 In addition to the water resources information provided in the Draft Solar PEIS, this
 2 section provides a planning-level inventory of available climate, surface water, and groundwater
 3 monitoring stations within the immediate vicinity of the Gold Point SEZ and surrounding basin.
 4 Additional data regarding climate, surface water, and groundwater conditions are presented in
 5 Tables 11.6.9.1-1 through 11.6.9.1-7 and in Figures 11.6.9.1-1 and 11.6.9.1-2. Fieldwork and
 6 hydrologic analyses to determine 100-year floodplains and jurisdictional water bodies would
 7 need to be coordinated with appropriate federal, state, and local agencies. Areas within the
 8 Gold Point SEZ that are found to be within a 100-year floodplain will be identified as
 9 non-development areas. Any water features within the Gold Point SEZ determined to be
 10 jurisdictional will be subject to the permitting process described in the CWA.

11
 12
 13
 14

TABLE 11.6.9.1-1 Watershed and Water Management Basin Information Relevant to the Proposed Gold Point SEZ as Revised

Basin	Name	Area (acres) ^b
Subregion (HUC4) ^a	Central Nevada Desert Basins (1606)	30,543,311
Cataloging unit (HUC8)	Cactus-Sarcobatus Flats (16060013)	1,764,557
Groundwater basin	Lida Valley	342,400
SEZ	Gold Point	4,810

^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 km², multiply by 0.004047.

15
 16
 17
 18

TABLE 11.6.9.1-2 Climate Station Information Relevant to the Proposed Gold Point 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.)
Dyer, Nevada (262431)	4,900	42	1903–2011	4.98	12.60
Goldfield, Nevada (263285)	5,690	22	1906–2009	6.06	17.80
Sarcobatus, Nevada (267319)	4,022	21	1941–1961	3.36	5.50

^a National Weather Service’s Cooperative Station Network station identification code.

^b Surface elevations for the proposed Gold Point SEZ range from 4,831 to 5,059 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).

19

1
2
3

TABLE 11.6.9.1-3 Total Lengths of Selected Streams at the Subregion, Cataloging Unit, and SEZ Scale Relevant to the Proposed Gold Point 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	0	0
Intermittent/ephemeral streams	724,309,083	46,805,586	110,704
Canals	4,035,992	80,411	0

^a To convert ft to m, multiply by 0.3048.

Source: USGS (2012a).

4
5
6
7

TABLE 11.6.9.1-4 Stream Discharge Information Relevant to the Proposed Gold Point SEZ as Revised

Parameter	Station (USGS ID)	
	Stonewall Flat Tributary near Goldfield, Nevada (10248970)	Lida Pass Tributary near Lida, Nevada (10248980)
Period of record	1963–1984	1968–1981
No. of observations	20	14
Discharge, median (ft ³ /s)	1	0
Discharge, range (ft ³ /s)	0–150	0–1
Discharge, most recent observation (ft ³ /s)	7.5	0
Distance to SEZ (mi)	16	11

^a To convert ft³ to m³, multiply by 0.0283.

^b To convert mi to km, multiply by 1.6093.

Source: USGS (2012b).

8
9

11.6.9.2 Impacts

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12
13
14

11.6.9.2.1 Land Disturbance Impacts on Water Resources

15
16
17

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 Gold Point SEZ could potentially affect drainage patterns, intermittent/ephemeral

1
2

TABLE 11.6.9.1-5 Surface Water Quality Data Relevant to the Proposed Gold Point SEZ as Revised

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

^a NA = no data collected for this parameter.

Source: USGS (2012b).

3
4
5
6
7

TABLE 11.6.9.1-6 Water Quality Data from Groundwater Samples Relevant to the Proposed Gold Point SEZ as Revised

Parameter	Station (USGS ID) ^a
	371647117015201
Period of record	2003
No. of records	1
Temperature (°C) ^b	21.5
Total dissolved solids (mg/L)	978
Dissolved oxygen (mg/L)	4.4
pH	7.2
Nitrate + nitrite (mg/L as N)	0.97
Phosphate (mg/L)	0.028
Organic carbon (mg/L)	NA ^c
Calcium (mg/L)	NA
Magnesium (mg/L)	NA
Sodium (mg/L)	NA
Chloride (mg/L)	NA
Sulfate (mg/L)	NA
Arsenic (µ/L)	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 (2012b).

8
9
10

1 **TABLE 11.6.9.1-7 Groundwater Surface Elevations Relevant to the Proposed Gold Point SEZ as**
 2 **Revised**

Parameter	Station (USGS ID)		
	372138117274001	373003117110101	372700117110001
Period of record	1967–1984	1958	1967–1994
No. of observations	2	1	16
Surface elevation (ft) ^a	5,262	4,690	4,622
Well depth (ft)	NA	604	NA
Depth to water, median (ft)	306.06	365	288.3
Depth to water range, (ft)	302.12–310	–	283.74–297.96
Depth to water, most recent observation (ft)	302.12	365	287.44
Distance to SEZ (mi) ^b	6	12	11

^a To convert ft to m, multiply by 0.3048.

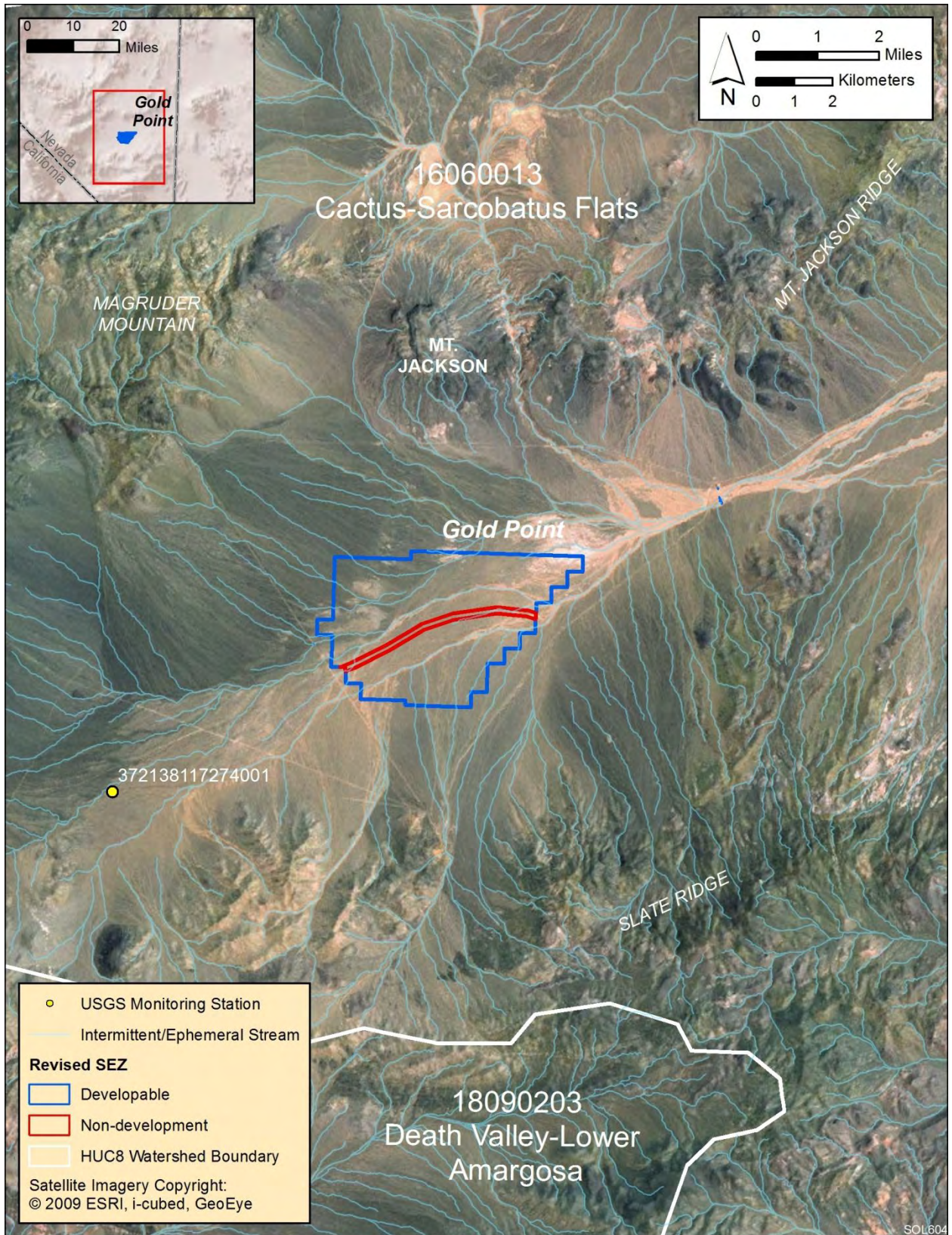
^b To convert mi to km, multiply by 1.6093.

Source: USGS (2012b).

3
 4
 5 streamflows, and groundwater recharge and discharge properties. The alteration of
 6 natural drainage pathways during construction can lead to impacts related to flooding, loss of
 7 water delivery to downstream regions, and alterations to riparian vegetation and habitats. The
 8 identification of non-development areas associated with the intermittent tributary to Jackson
 9 Wash was made using low-resolution data from the National Hydrography Dataset
 10 (USGS 2012a), which did not completely capture the braided channels of the unnamed
 11 intermittent tributary to Jackson Wash as shown in Figure 11.6.9.1-1 of this Final Solar PEIS.

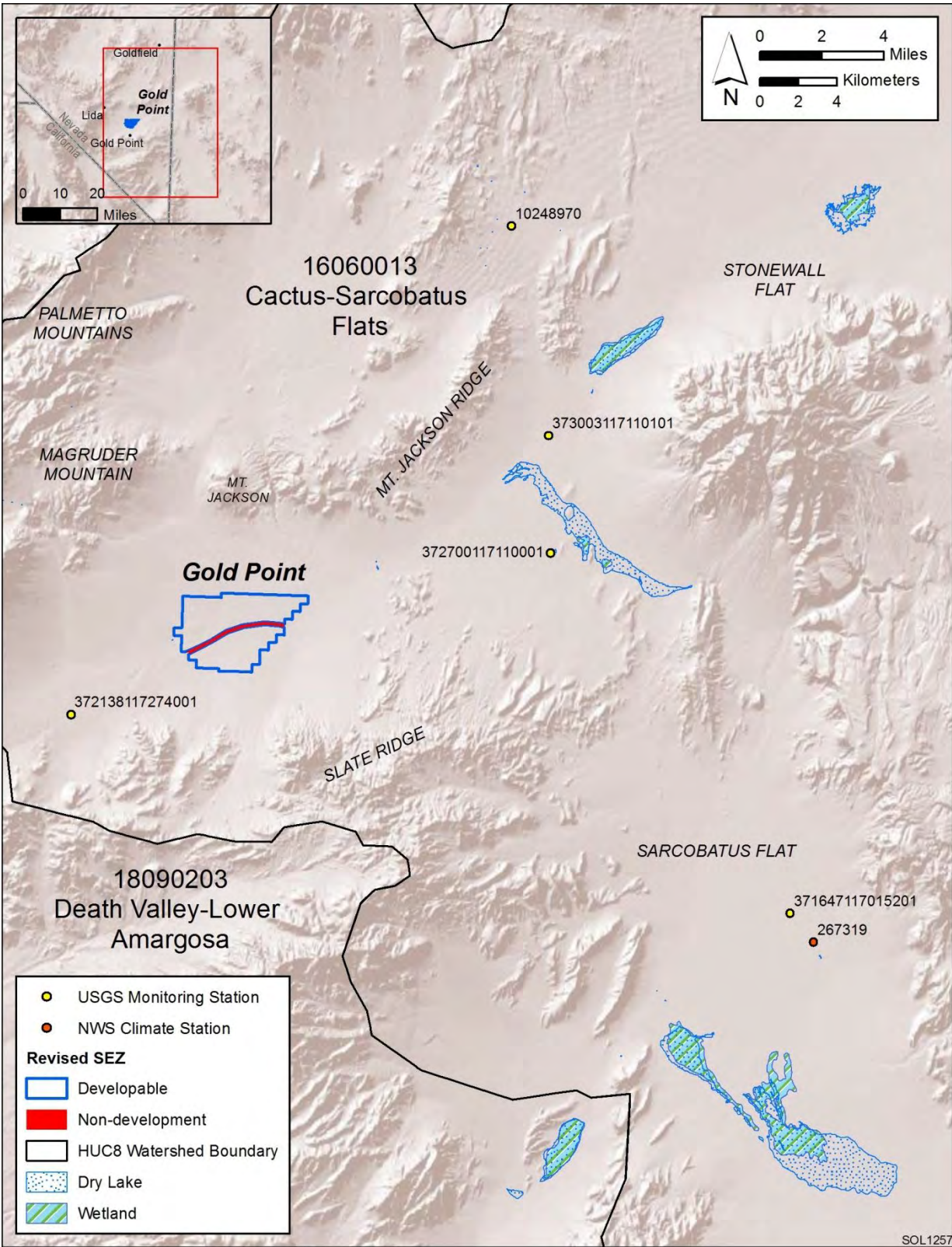
12
 13 Land clearing, land leveling, and vegetation removal during the development of the SEZ
 14 have the potential to disrupt intermittent/ephemeral stream channels. Several programmatic
 15 design features described in Section A.2.2 of Appendix A of this Final Solar PEIS would avoid,
 16 minimize, and/or mitigate impacts associated with the disruption of intermittent/ephemeral water
 17 features. Additional analyses of intermittent/ephemeral streams are presented in this update,
 18 including an evaluation of functional aspects of stream channels with respect to groundwater
 19 recharge, flood conveyance, sediment transport, geomorphology, and ecological habitats. Only a
 20 summary of the results from these surface water analyses is presented in this section; more
 21 information on methods and results is presented in Appendix O.

22
 23 The study region considered for the intermittent/ephemeral stream evaluation relevant to
 24 the Gold Point SEZ is a subset of the Cactus-Sarcobatus Flats watershed (HUC8), for which
 25 information regarding stream channels is presented in Tables 11.6.9.1-3 and 11.6.9.1-4 of this
 26 Final Solar PEIS. The results of the intermittent/ephemeral stream evaluation are shown in
 27 Figure 11.6.9.2-1, which depicts flow lines from the National Hydrography Dataset
 28 (USGS 2012a) labeled as low, moderate, and high sensitivity to land disturbance. Within the
 29 study area, 22% of the intermittent/ephemeral stream channels had low sensitivity, 64% had



1

2 **FIGURE 11.6.9.1-1 Water Features near the Proposed Gold Point SEZ as Revised**



1

2 **FIGURE 11.6.9.1-2 Water Features within the Catus-Sarcobatus Flats Watershed, Which**
 3 **Includes the Proposed Gold Point SEZ as Revised**

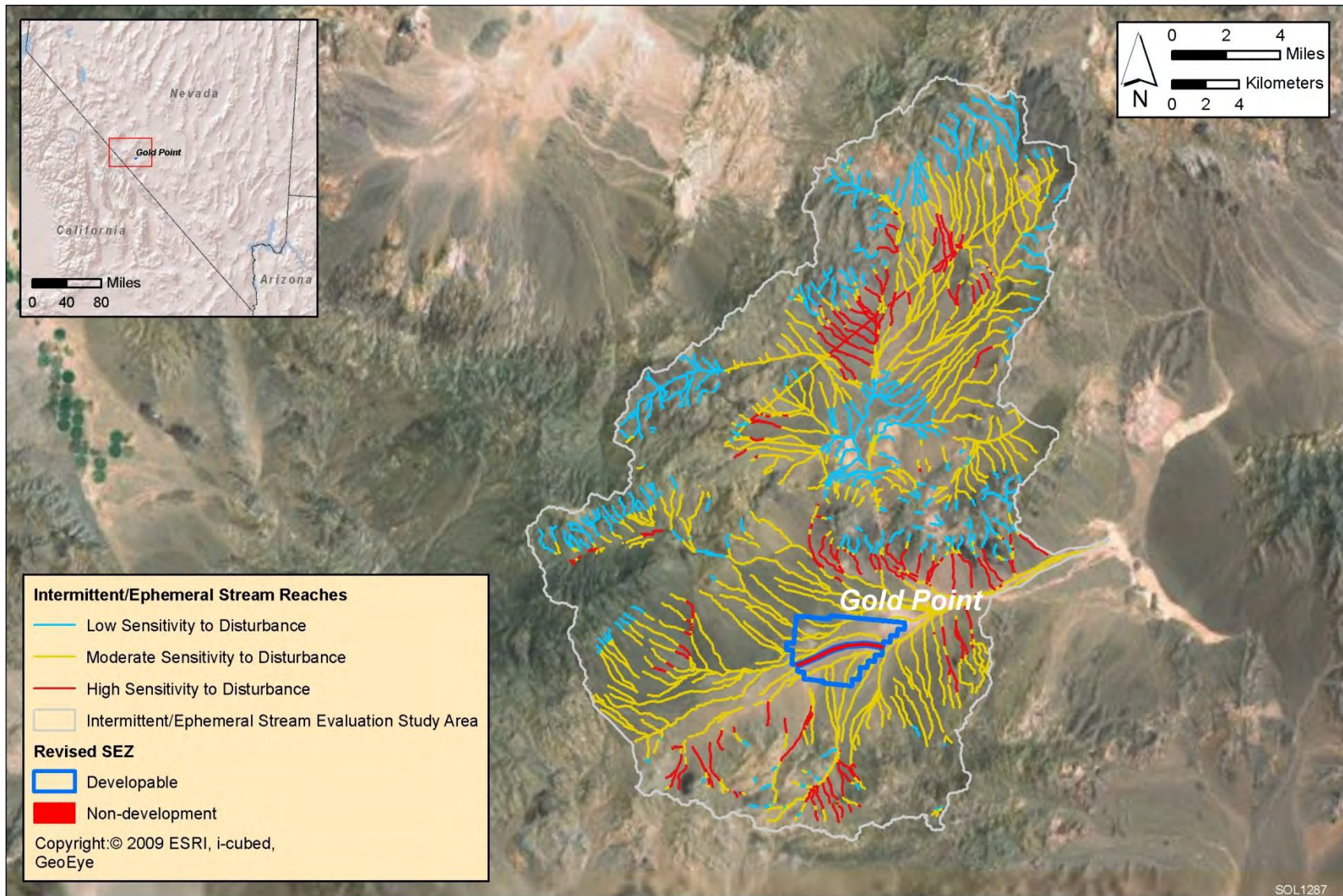


FIGURE 11.6.9.2-1 Intermittent/Ephemeral Stream Channel Sensitivity to Surface Disturbances in the Vicinity of the Proposed Gold Point SEZ as Revised

1 moderate sensitivity, and 13% had high sensitivity to land disturbance. All stream reaches within
2 the SEZ have moderate sensitivity to land disturbance.

3 4 5 ***11.6.9.2.2 Water Use Requirements for Solar Energy Technologies*** 6

7 The water use requirements for full build-out scenarios of the Gold Point SEZ have not
8 changed from the values presented in the Draft Solar PEIS (see Tables 11.7.9.2-1 and 11.7.9.2-2
9 in the Draft Solar PEIS). This section presents additional analyses pertaining to groundwater,
10 which includes a basin-scale groundwater budget and a simplified, one-dimensional groundwater
11 model of potential groundwater drawdown. Only a summary of the results from these
12 groundwater analyses is presented in this section; more information on methods and results
13 is presented in Appendix O.

14
15 The estimated total water use requirements during the peak construction year are as high
16 as 1,707 ac-ft/yr (2.1 million m³/yr). The total annual water requirements for operations were
17 categorized as low, medium, and high groundwater pumping scenarios that represent full
18 build-out of the SEZ, assuming PV, dry-cooled parabolic trough, and wet-cooled parabolic
19 trough, respectively (a 30% operational time was considered for all solar facility types on
20 the basis of operations estimates for proposed utility-scale solar energy facilities). This
21 categorization results in water use estimates that range from 22 to 3,859 ac-ft/yr (27,100 to
22 4.8 million m³/yr), or a total of 440 to 77,180 ac-ft (542,700 to 95.2 million m³) over the 20-year
23 operational period.

24
25 A basin-scale groundwater budget was assembled using available data on groundwater
26 inputs, outputs, and storage (Table 11.6.9.2-1) for comparison with water use estimates relating
27 to solar energy development. The peak construction year water requirements are greater than
28 the total annual groundwater inputs to the Lida Valley Basin, but only represent 0.3% of the
29 groundwater storage. Given the short duration of construction activities, impacts associated
30 with the construction water demand are considered minimal. The long duration of groundwater
31 pumping during operations (20 years) poses a greater threat to groundwater resources. The high
32 pumping scenario exceeds the annual groundwater inputs to the basin by more than a factor of
33 5, and 13% of the groundwater storage over the 20-year operational period. The medium
34 pumping scenario is similar to the amount of groundwater recharge the basin receives from
35 precipitation and 2% of the groundwater storage over the 20-year operational period. The low
36 pumping scenario poses the least impacts considering its relative magnitude to groundwater
37 inputs to the basin, and it represents only 6% of the perennial yield set by the NDWR to guide
38 allocations of water rights.

39
40 Groundwater budgeting allows for quantification of complex groundwater processes
41 at the basin scale, but it ignores the temporal and spatial components of how groundwater
42 withdrawals affect groundwater surface elevations, groundwater flow rates, and connectivity
43 to surface water features such as streams, wetlands, playas, and riparian vegetation. A
44 one-dimensional groundwater modeling analysis was performed to present a simplified depiction
45 of the spatial and temporal effects of groundwater withdrawals by examining groundwater
46 drawdown in a radial direction around the center of the SEZ for the low, medium, and high

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TABLE 11.6.9.2-1 Groundwater Budget for the Lida Valley Groundwater Basin, Which Includes the Proposed Gold Point SEZ as Revised

Process	Amount ^a
<i>Inputs</i>	
Precipitation recharge (ac-ft/yr)	500
Underflow from Stonewall Flat (ac-ft/yr)	200
<i>Outputs</i>	
Underflow to Sarcobatus Flat (ac-ft/yr)	700
Discharge to springs (ac-ft/yr)	20
Groundwater withdrawals, 1966 (ac-ft/yr)	30
<i>Storage</i>	
Storage (ac-ft)	600,000
Perennial yield (ac-ft/yr)	350 ^b

^a To convert ac-ft to m³, multiply by 1,234.

^b Defined by NDWR

Source: Rush (1968).

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pumping scenarios. A detailed discussion of the groundwater modeling analysis is presented in Appendix O. It should be noted, however, that the aquifer parameters used for the one-dimensional groundwater model (Table 11.6.9.2-2) represent available literature data, and that the model aggregates these value ranges into a simplistic representation of the aquifer.

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Depth to groundwater ranges between 300 and 400 ft (91 and 122 m) below the surface in the Lida Valley. The one-dimensional groundwater modeling results suggest that groundwater withdrawals for solar energy development would result in groundwater drawdown in the vicinity of the SEZ (approximately a 2-mi [3.2-km] radius) that ranges up to 20 ft (6 m) for the high pumping scenario, up to 3 ft (1 m) for the medium pumping scenario, and less than 1 ft (0.3 m) for the low pumping scenario (Figure 11.6.9.2-2). The majority of the groundwater drawdown occurs within the vicinity of the SEZ. However, more than 2 ft (0.6 m) of drawdown occurs 10 mi (16 km) away from the SEZ under the high pumping scenario, and 1 ft (0.3 m) of drawdown occurs 5 mi (8 km) away from the SEZ under the medium pumping scenario.

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11.6.9.2.3 Off-Site Impacts: Roads and Transmission Lines

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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

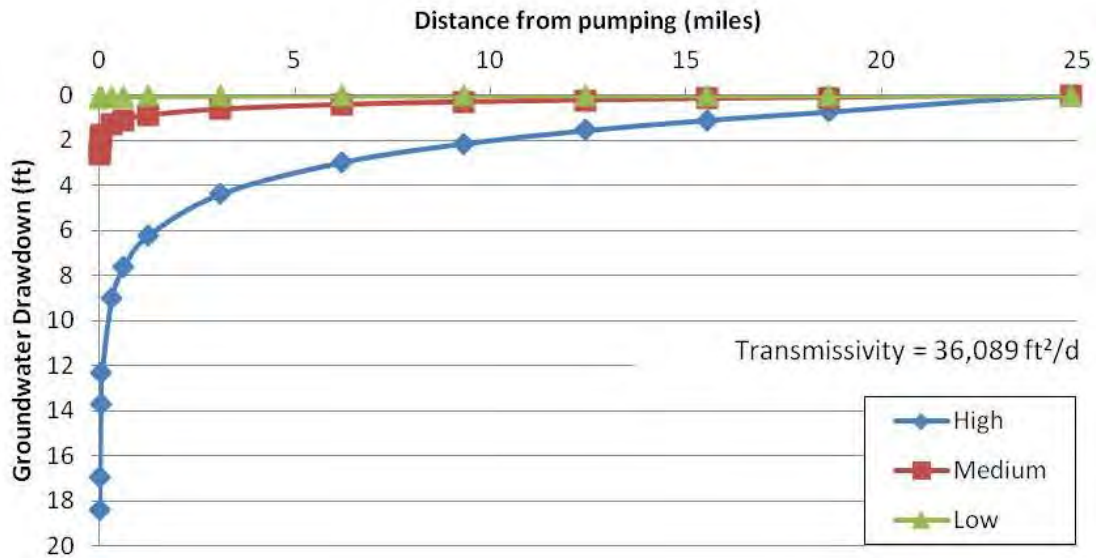
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TABLE 11.6.9.2-2 Aquifer Characteristics and Assumptions Used in the One-Dimensional Groundwater Model for the Proposed Gold Point SEZ as Revised

Parameter	Value ^a
Aquifer type/conditions	Basin fill/unconfined
Aquifer thickness (ft) ^b	500–2,460 (1,000)
Hydraulic conductivity (ft/day) ^c	0.003–427 (36)
Transmissivity (ft ² /day)	36,089
Specific yield ^c	0.0004–0.2 (0.03)
Analysis period (yr)	20
High pumping scenario (ac-ft/yr) ^d	3,859
Medium pumping scenario (ac-ft/yr) ^d	550
Low pumping scenario (ac-ft/yr) ^d	22

- a Values in parentheses used for modeling analysis.
- b Faunt et al. (2004).
- c Belcher et al. (2001).
- d To convert ac-ft to m³, multiply by 1,234.

4
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6

FIGURE 11.6.9.2-2 Estimated One-Dimensional Groundwater Drawdown Resulting from High, Medium, and Low Groundwater Pumping Scenarios over the 20-Year Operational Period at the Proposed Gold Point SEZ as Revised

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1 an off-site source. If this occurred, water use impacts at the SEZ would be negligible. The Draft
2 Solar PEIS assessment of impacts on water resources from road and transmission line
3 construction remains valid.
4
5

6 ***11.6.9.2.4 Summary of Impacts on Water Resources*** 7

8 The additional information and analyses of water resources presented in this update agree
9 with information provided in the Draft Solar PEIS, which indicates that the Gold Point SEZ is
10 located in a high-elevation desert valley where water resources are primarily groundwater, along
11 with intermittent/ephemeral surface water features. Groundwater is primarily found in the basin-
12 fill aquifer that is connected to adjacent valleys. Current groundwater withdrawals in the Lida
13 Valley Basin are unknown, but water right allocations total 245 ac-ft/yr (302,200 m³/yr)
14 primarily for commercial uses (NDWR 2012).
15

16 Disturbances to intermittent/ephemeral streams within the Gold Point SEZ could
17 potentially affect ecological habitats associated with the stream channels within the SEZ. The
18 intermittent/ephemeral stream evaluation identified several stream reaches in the study region
19 with moderate sensitivity to land disturbance; however, high-sensitivity reaches with respect to
20 groundwater recharge, flood and sediment conveyance, and ecological habitats were variable
21 across the study area, but typically the total sensitivity was in the moderate range (Figure O.1-5
22 in Appendix O). In addition, portions of the tributary channels to Jackson Wash extend outside
23 the non-development area of the SEZ. As stated in the Draft Solar PEIS, floodplain maps in the
24 adjacent Nye County suggest that 100-year floodplain areas could be associated with these
25 tributary channels, and design features in Appendix A of this Final Solar PEIS describe the need
26 to avoid identified 100-year floodplain areas.
27

28 Groundwater withdrawals associated with the medium and high pumping scenarios have
29 the potential to adversely affect groundwater resources in the Lida Valley as they are equal to or
30 greatly exceed groundwater recharge for the basin. Groundwater withdrawals associated with the
31 low pumping scenario are preferred given the groundwater budget constraints, along with the
32 minimal observed groundwater drawdown estimated by the one-dimensional modeling analysis.
33 Ultimately, securing water rights may limit groundwater withdrawals as the perennial yield of
34 the Lida Valley is set at 350 ac-ft/yr (431,700 m³/yr), which the NDWR uses as a guideline in
35 allocating water rights.
36

37 Predicting impacts associated with groundwater withdrawals is often difficult given the
38 heterogeneity of aquifer characteristics, the long time period between the onset of pumping and
39 its effects, and limited data. One of the primary mitigation measures to protect water resources is
40 the implementation of long-term monitoring and adaptive management (see Section A.2.4 of
41 Appendix A). For groundwater, this requires the combination of monitoring and modeling to
42 fully identify the temporal and spatial extent of potential impacts. The framework for a long-term
43 monitoring program would need to be created for the Gold Point SEZ once development begins.
44
45

1 **11.6.9.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on surface water
4 and groundwater are described in Section A.2.2 of Appendix A of this Final Solar PEIS.
5 Implementing the programmatic design features will provide some protection of and reduce
6 impacts on water resources.
7

8 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
9 analyses due to changes to the SEZ boundaries, and consideration of comments received as
10 applicable, the following SEZ-specific design feature has been identified:
11

- 12 • Groundwater analyses suggest that full build-out of wet- and dry-cooled
13 technologies is not feasible; for mixed-technology development scenarios, any
14 proposed wet- and dry-cooled projects should utilize water conservation
15 practices.
16

17 The need for additional SEZ-specific design features will be identified through the
18 process of preparing parcels for competitive offer and subsequent project-specific analysis.
19
20

21 **11.6.10 Vegetation**
22

23 **11.6.10.1 Affected Environment**
24

25 The proposed Gold Point SEZ was revised to identify 214 acres (0.87 km²) along a
26 significant unnamed intermittent stream traversing the SEZ from west to east as a non-
27 development area. In addition, the assumed transmission line was removed from consideration.
28
29

30 As presented in Section 11.6.10.1 of the Draft Solar PEIS, 5 cover types were identified
31 within the area of the proposed Gold Point SEZ, while 16 cover types were identified in the area
32 of indirect impacts, including the assumed transmission line corridor. Sensitive habitats on the
33 SEZ include riparian, desert dry wash, and playa habitats. Because of the removal of the
34 assumed transmission line from consideration, the Developed (Open Space-Low Intensity) and
35 Developed (Medium-High Intensity) cover types are no longer within the indirect impact area.
36 Figure 11.6.10.1-1 shows the cover types within the affected area of the Gold Point SEZ as
37 revised.
38
39

40 **11.6.10.2 Impacts**
41

42 As presented in the Draft Solar PEIS, the construction of solar energy facilities within the
43 proposed Gold Point SEZ would result in direct impacts on plant communities because of the
44 removal of vegetation within the facility footprint during land-clearing and land-grading
45 operations. Approximately 80% of the SEZ would be expected to be cleared with full

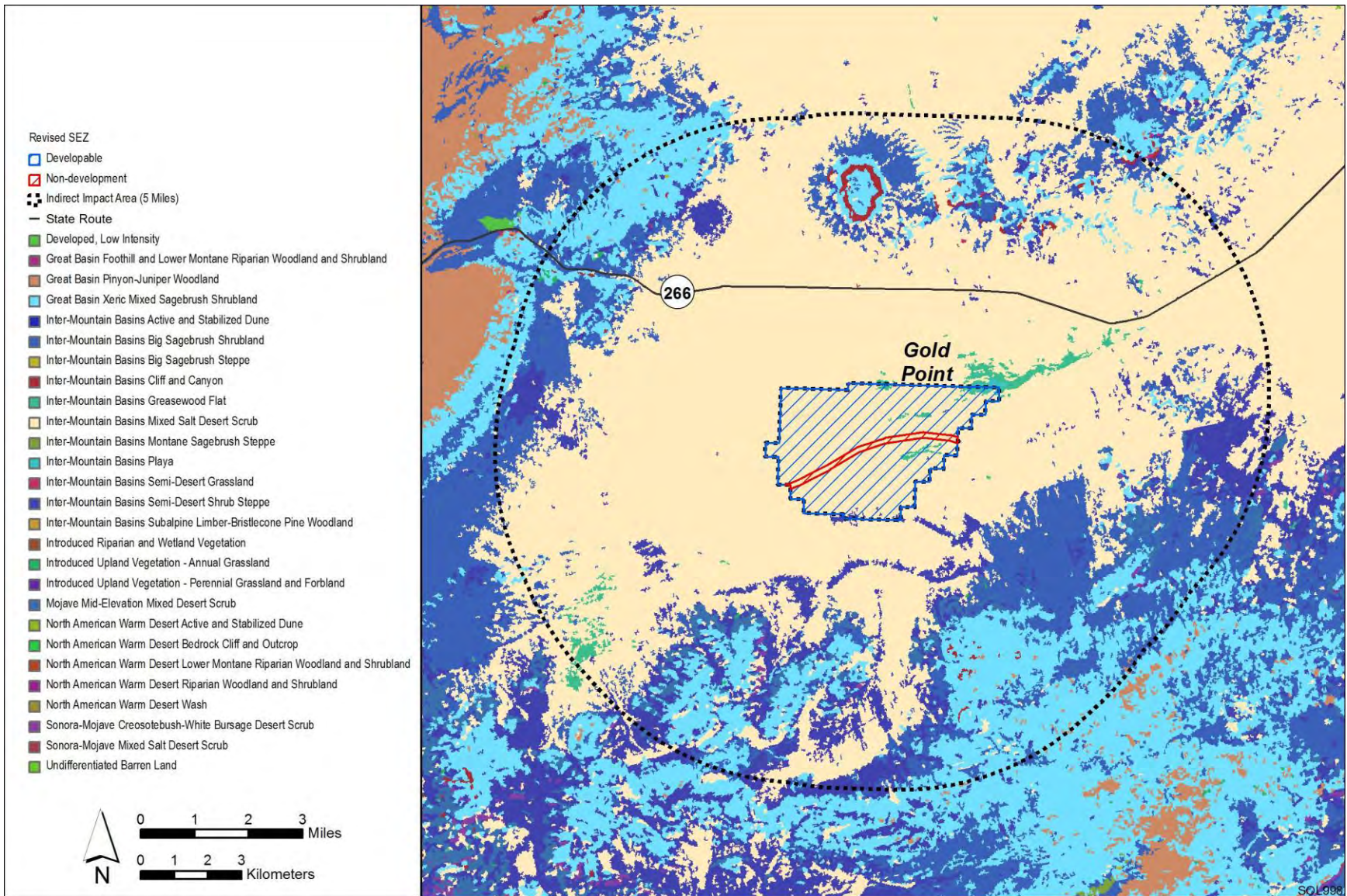


FIGURE 11.6.10.1-1 Land Cover Types within the Proposed Gold Point SEZ as Revised

1 development of the SEZ. As a result of the changes to the proposed SEZ developable area,
2 approximately 3,677 acres (14.9 km²) would be cleared.
3

4 Overall impact magnitude categories were based on professional judgment and include
5 (1) *small*: a relatively small proportion ($\leq 1\%$) of the cover type within the SEZ region would be
6 lost; (2) *moderate*: an intermediate proportion (> 1 but $\leq 10\%$) of a cover type would be lost; and
7 (3) *large*: $> 10\%$ of a cover type would be lost.
8
9

10 ***11.6.10.2.1 Impacts on Native Species***

11
12 The analysis presented in the Draft Solar PEIS based on the original Gold Point SEZ
13 developable area indicated that development would result in a small impact on all land cover
14 types occurring within the SEZ (Table 11.6.10.1-1 in the Draft Solar PEIS). Development within
15 the revised Gold Point SEZ could still directly affect all of the cover types evaluated in the Draft
16 Solar PEIS. The reduction in the developable area would result in reduced impact levels on these
17 cover types in the affected area, but the impact magnitudes would remain unchanged compared
18 to the original estimates in the Draft Solar PEIS.
19

20 Direct impacts on the stream that occurs within the non-developable portion of the SEZ,
21 or the previously identified transmission corridor, would not occur. As a result, direct impacts
22 on the Developed (Open Space-Low Intensity) and Developed (Medium-High Intensity) cover
23 types, which had occurred within the transmission corridor, would not occur. However, direct
24 impacts on dry washes and playas could still occur. Indirect impacts on habitats associated with
25 playas, washes, or riparian habitats within or near the SEZ, as described in the Draft Solar PEIS,
26 could also occur.
27
28

29 ***11.6.10.2.2 Impacts from Noxious Weeds and Invasive Plant Species***

30
31 As presented in the Draft Solar PEIS, land disturbance from project activities and indirect
32 effects of construction and operation within the Gold Point SEZ could potentially result in the
33 establishment or expansion of noxious weeds and invasive species populations, potentially
34 including those species listed in Section 11.6.10.1 of the Draft Solar PEIS. Impacts such as
35 reduced restoration success and possible widespread habitat degradation could still occur;
36 however, a small reduction in the potential for such impacts would result from the reduced
37 developable area of the SEZ.
38
39

40 **11.6.10.3 SEZ-Specific Design Features and Design Feature Effectiveness**

41
42 Required programmatic design features that would reduce impacts on vegetation are
43 described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific species and
44 habitats determine how programmatic design features are applied, for example:
45

- 1 • All riparian, dry wash, and playa communities within the SEZ shall be
2 avoided to the extent practicable, and any impacts minimized and mitigated in
3 consultation with appropriate agencies. Any Joshua tree or other *Yucca*
4 species, cacti, or succulent plant species that cannot be avoided shall be
5 salvaged. A buffer area shall be maintained around dry wash, riparian, and
6 playa habitats to reduce the potential for impacts.
7
- 8 • Appropriate engineering controls shall be used to minimize impacts on dry
9 wash, playa, wetland, greasewood flat, and riparian habitats, including
10 downstream occurrences, resulting from surface water runoff, erosion,
11 sedimentation, altered hydrology, accidental spills, or fugitive dust deposition.
12 Appropriate buffers and engineering controls will be determined through
13 agency consultation.
14
- 15 • Groundwater withdrawals shall be limited to reduce the potential for indirect
16 impacts on habitats associated with springs. Potential impacts on springs shall
17 be determined through hydrological studies.
18

19 It is anticipated that implementation of these programmatic design features will reduce a
20 high potential for impacts from invasive species and impacts on dry washes, playas, riparian
21 habitats, wetlands, and springs to a minimal potential for impact. Residual impacts on
22 groundwater-dependent habitats could result from limited groundwater withdrawal; however, it
23 is anticipated that these impacts would be avoided in the majority of instances.
24

25 On the basis of impact analyses conducted for the Draft Solar PEIS, updates to those
26 analyses due to changes to the SEZ boundaries, and consideration of comments received as
27 applicable, no SEZ-specific design features for vegetation have been identified. Some SEZ-
28 specific design features may be identified through the process of preparing parcels for
29 competitive offer and subsequent project-specific analysis.
30
31

32 **11.6.11 Wildlife and Aquatic Biota**

33

34 For the assessment of potential impacts on wildlife and aquatic biota, overall impact
35 magnitude categories were based on professional judgment and include (1) *small*: a relatively
36 small proportion ($\leq 1\%$) of the species' habitat within the SEZ region would be lost;
37 (2) *moderate*: an intermediate proportion (> 1 but $\leq 10\%$) of the species' habitat would be lost;
38 and (3) *large*: $> 10\%$ of the species' habitat would be lost.
39
40

41 **11.6.11.1 Amphibians and Reptiles**

42
43

44 ***11.6.11.1.1 Affected Environment***

45

46 As presented in Section 11.6.11.1 of the Draft Solar PEIS, representative amphibian and
47 reptile species expected to occur within the Gold Point SEZ include the Great Plains toad (*Bufo*

1 *cognatus*), red-spotted toad (*Bufo punctatus*), desert horned lizard (*Phrynosoma platyrhinos*),
2 Great Basin collared lizard (*Crotaphytus bicinctores*), long-nosed leopard lizard (*Gambelia*
3 *wislizenii*), western fence lizard (*Sceloporus occidentalis*), western whiptail (*Cnemidophorus*
4 *tigris*), zebra-tailed lizard (*Callisaurus draconoides*), coachwhip (*Masticophis flagellum*),
5 common kingsnake (*Lampropeltis getula*), glossy snake (*Arizona elegans*), gophersnake
6 (*Pituophis catenifer*), groundsnake (*Sonora semiannulata*), long-nosed snake (*Rhinocheilus*
7 *lecontei*), nightsnake (*Hypsiglena torquata*), and Mojave rattlesnake (*Crotalus scutulatus*).
8
9

10 ***11.6.11.1.2 Impacts***

11

12 As presented in the Draft Solar PEIS, solar energy development within the proposed Gold
13 Point SEZ could affect potentially suitable habitats for the representative amphibian and reptile
14 species. The analysis presented in the Draft Solar PEIS for the Gold Point SEZ indicated that
15 development would result in a small overall impact on all representative amphibian and reptile
16 species (Table 11.6.11.1-1 in the Draft Solar PEIS). The reduction in the developable area of the
17 Gold Point SEZ would result in reduced habitat impacts for all representative amphibian and
18 reptile species; the resultant impact levels for all the representative species would still be small.
19
20

21 ***11.6.11.1.3 SEZ-Specific Design Features and Design Feature Effectiveness***

22

23 Required programmatic design features that would reduce impacts on amphibian and
24 reptile species are described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-
25 specific conditions will be considered when programmatic design features are applied, for
26 example:
27

- 28 • Development in wash, playa, and cliff and canyon habitats shall be avoided.
29

30 The major wash (significant unnamed intermittent stream) in the SEZ has been identified
31 as a non-development area, but other avoidable washes may exist within the SEZ. With the
32 implementation of programmatic design features, impacts on amphibian and reptile species
33 would be reduced.
34

35 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
36 comments received as applicable, no SEZ-specific design features for amphibian and reptile
37 species have been identified. Some SEZ-specific design features may be identified through the
38 process of preparing parcels for competitive offer and subsequent project-specific analysis.
39
40

41 ***11.6.11.2 Birds***

42
43

44 ***11.6.11.2.1 Affected Environment***

45

46 As presented in Section 11.6.11.2.1 of the Draft Solar PEIS, a large number of bird
47 species could occur or have potentially suitable habitat within the affected area of the proposed

1 Gold Point SEZ. Representative bird species identified in the Draft Solar PEIS include
2 (1) shorebirds: killdeer (*Charadrius vociferus*); (2) passerines: ash-throated flycatcher
3 (*Myiarchus cinerascens*), Bewick's wren (*Thryomanes bewickii*), black-tailed gnatcatcher
4 (*Poliophtila melanura*), black-throated sparrow (*Amphispiza bilineata*), Brewer's sparrow
5 (*Spizella breweri*), cactus wren (*Campylorhynchus brunneicapillus*), common poorwill
6 (*Phalaenoptilus nuttallii*), common raven (*Corvus corax*), greater roadrunner (*Geococcyx*
7 *californianus*), horned lark (*Eremophila alpestris*), ladder-backed woodpecker (*Picoides*
8 *scalaris*), Le Conte's thrasher (*Toxostoma lecontei*), lesser nighthawk (*Chordeiles acutipennis*),
9 loggerhead shrike (*Lanius ludovicianus*), northern mockingbird (*Mimus polyglottos*), rock wren
10 (*Salpinctes obsoletus*), sage sparrow (*Amphispiza belli*), Say's phoebe (*Sayornis saya*), and
11 western kingbird (*Tyrannus verticalis*); (3) raptors: American kestrel (*Falco sparverius*), golden
12 eagle (*Aquila chrysaetos*), great horned owl (*Bubo virginianus*), long-eared owl (*Asio otus*),
13 red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*); and (4) upland
14 gamebirds: chukar (*Alectoris chukar*), Gambel's quail (*Callipepla gambelii*), and mourning dove
15 (*Zenaida macroura*).

16 17 18 **11.6.11.2.2 Impacts** 19

20 As presented in the Draft Solar PEIS, solar energy development within the Gold Point
21 SEZ could affect potentially suitable bird habitats. The analysis presented in the Draft Solar
22 PEIS indicated that development would result in a small overall impact on all representative bird
23 species (Table 11.6.11.2-1 in the Draft Solar PEIS). The reduction in the developable area of the
24 Gold Point SEZ would result in reduced habitat impacts for all representative bird species; the
25 resultant impact levels for all representative bird species would still be small.
26

27 28 **11.6.11.2.3 SEZ-Specific Design Features and Design Feature Effectiveness** 29

30 Required programmatic design features that would reduce impacts on bird species are
31 described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of
32 required programmatic design features, impacts on bird species are anticipated to be small.
33

34 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
35 comments received as applicable, the following SEZ-specific design feature for birds has been
36 identified:
37

- 38 • Wash and playa habitats should be avoided. The major wash (significant
39 unnamed intermittent stream) in the SEZ has been identified as a non-
40 development area, but other avoidable washes may exist within the SEZ.
41

42 If SEZ-specific design features are implemented in addition to required programmatic
43 design features, impacts on bird species would be small. The need for additional SEZ-specific
44 design features will be identified through the process of preparing parcels for competitive offer
45 and subsequent project-specific analysis.
46

1 **11.6.11.3 Mammals**

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3
4 **11.6.11.3.1 Affected Environment**

5
6 As presented in Section 11.6.11.3.1 of the Draft Solar PEIS, a large number of mammal
7 species were identified that could occur or have potentially suitable habitat within the affected
8 area of the proposed Gold Point SEZ. Representative mammal species identified in the Draft
9 Solar PEIS include (1) big game species: cougar (*Puma concolor*), elk (*Cervus canadensis*),
10 mule deer (*Odocoileus hemionus*), and pronghorn (*Antilocapra americana*), (2) furbearers and
11 small game species: the American badger (*Taxidea taxus*), black-tailed jackrabbit (*Lepus*
12 *californicus*), bobcat (*Lynx rufus*), coyote (*Canis latrans*, common), desert cottontail (*Sylvilagus*
13 *audubonii*), gray fox (*Urocyon cinereoargenteus*), kit fox (*Vulpes macrotis*), and red fox (*Vulpes*
14 *vulpes*), and (3) small nongame species: Botta's pocket gopher (*Thomomys bottae*), cactus mouse
15 (*Peromyscus eremicus*), canyon mouse (*P. crinitis*), deer mouse (*P. maniculatus*), desert
16 kangaroo rat (*Dipodomys deserti*), desert shrew (*Notiosorex crawfordi*), desert woodrat
17 (*Neotoma lepida*), little pocket mouse (*Perognathus longimembris*), Merriam's pocket mouse
18 (*Dipodomys merriami*), northern grasshopper mouse (*Onychomys leucogaster*), southern
19 grasshopper mouse (*O. torridus*), and white-tailed antelope squirrel (*Ammospermophilus*
20 *leucurus*). Bat species that may occur within the area of the SEZ include the big brown bat
21 (*Eptesicus fuscus*), Brazilian free-tailed bat (*Tadarida brasiliensis*), California myotis (*Myotis*
22 *californicus*), hoary bat (*Lasiurus cinereus*), long-legged myotis (*M. volans*), silver-haired bat
23 (*Lasionycteris noctivagans*), and western pipistrelle (*Parastrellus hesperus*).
24
25

26 **11.6.11.3.2 Impacts**

27
28 As presented in the Draft Solar PEIS, solar energy development within the proposed Gold
29 Point SEZ could affect potentially suitable habitats of mammal species. The analysis presented in
30 the Draft Solar PEIS indicated that development would result in a small overall impact on all
31 representative mammal species analyzed (Table 11.6.11.3-1 in the Draft Solar PEIS). The
32 reduction in the developable area of the Gold Point SEZ would result in reduced habitat impacts
33 for all representative mammal species; resultant impact levels for all representative mammal
34 species would still be small. This conclusion also applies to mapped year-round pronghorn
35 habitat that occurs within the Gold Point SEZ.
36
37

38 **11.6.11.3.3 SEZ-Specific Design Features and Design Feature Effectiveness**

39
40 Required programmatic design features that would reduce impacts on mammal species
41 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. With implementation of
42 required programmatic design features, impacts on mammal species are anticipated to be small.
43

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

- 1 • The fencing around the solar energy development should not block the free
2 movement of mammals, particularly big game species.
- 3
- 4 • Wash and playa habitats should be avoided. The major wash (significant
5 unnamed intermittent stream) in the SEZ has been identified as a non-
6 development area, but other avoidable washes may exist within the SEZ.
- 7

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

12

13

14 **11.6.11.4 Aquatic Biota**

15

16

17 ***11.6.11.4.1 Affected Environment***

18

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

- 21
- 22 • The intermittent stream that runs through the center of the SEZ has been
23 identified as a non-development area.
- 24
- 25 • The route of a new transmission line described in the Draft Solar PEIS is no
26 longer assumed, and it is therefore not assumed to cross over Jackson Wash.
- 27

28 Aquatic biota present in the surface water features in the Gold Point SEZ have not been
29 characterized. As stated in Appendix C of the Supplement to the Draft Solar PEIS, site surveys
30 can be conducted at the project-specific level to characterize the aquatic biota, if present, within
31 the SEZ.

32

33

34 ***11.6.11.4.2 Impacts***

35

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

- 42
- 43 • The intermittent wash running through the center of the SEZ has been
44 identified as a non-development area; therefore, it would not be directly
45 affected by construction activities. However, as described in the Draft Solar

1 PEIS, it could be affected indirectly by solar development activities within the
2 SEZ.

- 3
4 • The transmission line corridor described in the Draft Solar PEIS is no longer
5 assumed for the Gold Point SEZ. Therefore, Jackson Wash may not be
6 directly affected by a stream crossing associated with a new transmission line.
7

8 9 ***11.6.11.4.3 SEZ-Specific Design Features and Design Feature Effectiveness***

10
11 Required programmatic design features that would reduce impacts on aquatic biota are
12 described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific conditions will
13 be considered when programmatic design features are applied, for example:

- 14
15 • Appropriate engineering controls shall be implemented to minimize the
16 amount of contaminants and sediment entering the unnamed intermittent
17 stream within the SEZ.
18

19 It is anticipated that the implementation of the programmatic design features will reduce
20 impacts on aquatic biota, and if the utilization of water from groundwater or surface water
21 sources is adequately controlled to maintain sufficient water levels in nearby aquatic habitats, the
22 potential impacts on aquatic biota from solar energy development at the Gold Point SEZ would
23 be small.
24

25 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
26 comments received as applicable, no SEZ-specific design features for aquatic biota have been
27 identified. Some SEZ-specific design features may be identified through the process of preparing
28 parcels for competitive offer and subsequent project-specific analysis.
29
30

31 **11.6.12 Special Status Species**

32 33 34 **11.6.12.1 Affected Environment**

35
36 As presented in the Draft Solar PEIS, 21 special status species were identified that could
37 occur or have potentially suitable habitat within the affected area of the proposed Gold Point
38 SEZ. Since publication of the Draft Solar PEIS, eight additional special status species have been
39 identified that could potentially occur in the affected area based on county-level occurrences and
40 the presence of potentially suitable habitat. These eight special status species are all designated
41 sensitive species by the Nevada BLM office and include (1) birds: golden eagle, loggerhead
42 shrike, and long-eared owl; and (2) mammals: big brown bat, California myotis, hoary bat, long-
43 legged myotis, and western pipistrelle. These additional species are discussed below.
44
45

1 **Golden Eagle.** The golden eagle is an uncommon to common permanent resident in
2 southern Nevada. This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS.
3 The species inhabits rolling foothills, mountain areas, and desert shrublands. It nests on cliff
4 faces and in large trees in open areas. Potentially suitable foraging habitat for this species may
5 occur on the SEZ and throughout the area of indirect effects (Table 11.6.12.1-1). On the basis of
6 an evaluation of SWReGAP land cover types, there is no suitable nesting habitat within the SEZ,
7 but approximately 350 acres (1.5 km²) of cliff and rock outcrop habitat that may be potentially
8 suitable nesting habitat occurs in the area of indirect effects.
9

10
11 **Loggerhead Shrike.** The loggerhead shrike is a common winter resident in lowlands and
12 foothills of southern Nevada. This species was not analyzed for the Gold Point SEZ in the Draft
13 Solar PEIS. The species occurs in open habitats with shrubs, trees, utility lines, or other perches.
14 The highest densities of this species occur in open-canopied foothill forests. On the basis of an
15 evaluation of the SWReGAP habitat suitability model for this species, potentially suitable
16 foraging habitat for the loggerhead shrike may occur on the SEZ and throughout the area of
17 indirect effects (Table 11.6.12.1-1).
18

19
20 **Long-Eared Owl.** The long-eared owl is an uncommon year-round resident in southern
21 Nevada. This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS. The
22 species inhabits desert shrubland environments in proximity to riparian areas such as desert
23 washes. It nests in trees using old nests from other birds or squirrels. Potentially suitable foraging
24 habitat for this species may occur on the SEZ and throughout the area of indirect effects
25 (Table 11.6.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
26 suitable nesting habitat (forests) does not occur on the SEZ. However, approximately 80 acres
27 (0.3 km²) of woodland habitat (pinyon-juniper) that may be potentially suitable nesting habitat
28 occurs in the area of indirect effects.
29

30
31 **Big Brown Bat.** The big brown bat is a fairly common year-round resident in southern
32 Nevada. This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS. The big
33 brown bat is uncommon in desert habitats but may occur in desert shrublands in close proximity
34 to water sources. The species inhabits desert shrubland environments in proximity to riparian
35 areas such as desert washes. It roosts in buildings, caves, mines, and trees. Potentially suitable
36 foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects
37 (Table 11.6.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
38 suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However,
39 approximately 80 acres (0.3 km²) of woodland habitat (pinyon-juniper) and 350 acres (1.5 km²)
40 of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area
41 of indirect effects.
42

43
44 **California Myotis.** The California myotis is a fairly common year-round resident in
45 southern Nevada. This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS.
46 The species inhabits desert, chaparral, woodlands, and forests. It roosts primarily in crevices but

1 **TABLE 11.6.12.1-1 Habitats, Potential Impacts, and Potential Mitigation for Special Status Species That Could Be Affected by Solar**
 2 **Energy Development on the Proposed Gold Point SEZ as Revised^a**

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^e and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Birds						
Golden eagle	<i>Aquila chrysaetos</i>	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 3,330,000 acres ¹ of potentially suitable habitat occurs within the SEZ region.	4,500 acres of potentially suitable habitat lost (0.1% of available potentially suitable habitat)	87,950 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 effects.
Loggerhead shrike	<i>Lanius ludovicianus</i>	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 3,300,000 acres of potentially suitable habitat occurs within the SEZ region.	4,490 acres of potentially suitable habitat lost (0.1% of available potentially suitable habitat)	88,000 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 effects.
Long-eared owl	<i>Asio otus</i>	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 3,210,000 acres of potentially suitable habitat occurs within the SEZ region.	4,500 acres of potentially suitable habitat lost (0.1% of available potentially suitable habitat)	87,700 acres of potentially suitable habitat (2.7% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.

TABLE 11.6.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Mammals						
Big brown bat	<i>Eptesicus fuscus</i>	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 2,350,000 acres of potentially suitable habitat occurs within the SEZ region.	4,560 acres of potentially suitable habitat lost (0.2% of available potentially suitable habitat)	63,400 acres of potentially suitable habitat (2.7% of available potentially suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.
California myotis	<i>Myotis californicus</i>	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 2,400,000 acres of potentially suitable habitat occurs within the SEZ region.	4,570 acres of potentially suitable habitat lost (0.2% of available potentially suitable habitat)	75,000 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 effects.
Hoary bat	<i>Lasiurus cinereus</i>	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 780,000 acres of potentially suitable habitat occurs within the SEZ region.	250 acres of potentially suitable habitat lost (<0.1% of available potentially suitable habitat)	8,400 acres of potentially suitable habitat (1.1% of available suitable habitat)	Small overall impact. Direct impact on foraging habitat only. Avoidance of direct impacts on all foraging habitat is not feasible because suitable foraging habitat is widespread in the area of direct effects.

TABLE 11.6.12.1-1 (Cont.)

Common Name	Scientific Name	Listing Status ^b	Habitat ^c	Maximum Area of Potential Habitat Affected ^d		Overall Impact Magnitude ^g and Species-Specific Mitigation ^h
				Within SEZ (Direct Effects) ^e	Outside SEZ (Indirect Effects) ^f	
Mammals (Cont.)						
Long-legged myotis		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 ^j elevation. Forages in chaparral, scrub, woodlands, and desert shrublands. Roosts in trees, caves, and crevices. About 2,300,000 acres of potentially suitable habitat occurs within the SEZ region.	4,550 acres of potentially suitable habitat lost (0.2% of available potentially suitable habitat)	63,400 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.
Western pipistrelle	<i>Pipistrellus Hesperus</i>	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 3,270,000 acres of potentially suitable habitat occurs within the SEZ region.	4,570 acres of potentially suitable habitat lost (0.1% of available potentially suitable habitat)	88,000 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 effects.

^a The species presented in this table represent new species identified following publication of the Draft Solar PEIS or a re-evaluation of those species that were determined to have moderate or large impacts in the Draft Solar PEIS. The other special status species for this SEZ are identified in Table 11.6.12.1-1 of the Draft Solar PEIS.

^b BLM-S = listed as sensitive by the BLM.

Footnotes continued on next page.

TABLE 11.6.12.1-1 (Cont.)

-
- ^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 Area of indirect effects was assumed to be the area adjacent to the SEZ within 5 mi (8 km) of the SEZ boundary where ground-disturbing activities would not occur. Indirect effects include effects from surface runoff, dust, noise, lighting, and so on from project developments. The potential degree of indirect effects would decrease with increasing distance away from the SEZ.
- ^g Overall impact magnitude categories were based on professional judgment and are as follows: (1) small: <1% of the population or its habitat would be lost and the activity would not result in a measurable change in carrying capacity or population size in the affected area; (2) moderate: >1 but <10% of the population or its habitat would be lost and the activity would result in a measurable but moderate (not destabilizing) change in carrying capacity or population size in the affected area; (3) large: >10% of a population or its habitat would be lost and the activity would result in a large, measurable, and destabilizing change in carrying capacity or population size in the affected area. Note that much greater weight was given to the magnitude of direct effects because those effects would be difficult to mitigate. Design features would reduce most indirect effects to negligible levels.
- ^h Species-specific mitigations are suggested here, but final mitigations should be developed in consultation with state and federal agencies and should be based on pre-disturbance surveys.
- ⁱ To convert acres to km², multiply by 0.004047.
- ^j To convert ft to m, multiply by 0.3048.

1 will also use buildings, mines, and hollow trees. Potentially suitable foraging habitat for this
2 species may occur on the SEZ and throughout the area of indirect effects (Table 11.6.12.1-1).
3 On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting
4 habitat (forests and rock outcrops) does not occur on the SEZ or area of indirect effects
5 (Table 11.6.12.1-1). However, approximately 80 acres (0.3 km²) of woodland habitat (pinyon-
6 juniper) and 350 acres (1.5 km²) of cliff and rock outcrop habitat that may be potentially suitable
7 roosting habitat occurs in the area of indirect effects.
8
9

10 **Hoary Bat.** The hoary bat is a fairly common year-round resident in southern Nevada.
11 This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS. The species
12 inhabits woodlands, foothills, desert shrublands, and chaparral. It roosts primarily in trees.
13 Potentially suitable foraging habitat for this species may occur on the SEZ and throughout
14 the area of indirect effects (Table 11.6.12.1-1). On the basis of an evaluation of SWReGAP
15 land cover types, potentially suitable roosting habitat (forests) does not occur on the SEZ
16 (Table 11.6.12.1-1). However, approximately 80 acres (0.3 km²) of woodland habitat (pinyon-
17 juniper) that may be potentially suitable roosting habitat occurs in the area of indirect effects.
18
19

20 **Long-Legged Myotis.** The long-legged myotis is a common to uncommon year-round
21 resident in southern Nevada. This species was not analyzed for the Gold Point SEZ in the Draft
22 Solar PEIS. This species is uncommon in desert and arid grassland environments and most
23 common in woodlands above 4,000-ft (1,219-m) elevation. It forages in chaparral, scrub,
24 woodlands, and desert shrublands and roosts in trees, caves, and crevices. Potentially suitable
25 foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects
26 (Table 11.6.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
27 suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However,
28 approximately 80 acres (0.3 km²) of woodland habitat (pinyon-juniper) and 350 acres (1.5 km²)
29 of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area
30 of indirect effects.
31
32

33 **Western Pipistrelle.** The western pipistrelle is a common year-round resident in southern
34 Nevada. This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS. The
35 species inhabits mountain foothill woodlands, desert shrublands, desert washes, and pinyon-
36 juniper woodlands. It roosts primarily in rock crevices and occasionally in mines and caves.
37 Potentially suitable foraging habitat for this species may occur on the SEZ and throughout the
38 area of indirect effects (Table 11.6.12.1-1). On the basis of an evaluation of SWReGAP land
39 cover types, potentially suitable roosting habitat (rock outcrops) does not occur on the SEZ.
40 However, approximately 350 acres (1.5 km²) of cliff and rock outcrop habitat that may be
41 potentially suitable roosting habitat occurs in the area of indirect effects.
42
43
44

1 **11.6.12.2 Impacts**
2

3 Overall impact magnitude categories were based on professional judgment and include
4 (1) *small*: a relatively small proportion ($\leq 1\%$) of the special status species' habitat within the
5 SEZ region would be lost; (2) *moderate*: an intermediate proportion (>1 but $\leq 10\%$) of the special
6 status species' habitat would be lost; and (3) *large*: $>10\%$ of the special status species' habitat
7 would be lost.
8

9 As presented in the Draft Solar PEIS, solar energy development within the Gold Point
10 SEZ could affect potentially suitable habitats of special status species. The analysis presented in
11 the Draft Solar PEIS for the Gold Point SEZ indicated that development would result in no
12 impact or a small overall impact on all special status species, with the exception of the Eastwood
13 milkweed (*Asclepias eastwoodiana*) (Table 11.6.12.1-1 in the Draft Solar PEIS). Development
14 within the Gold Point SEZ could still affect the same 21 species evaluated in the Draft Solar
15 PEIS; however, the reduction in the developable area would result in reduced (and still small)
16 impact levels compared to original estimates in the Draft Solar PEIS. Impacts on the Eastwood
17 milkweed were determined to range from small to large depending on the availability of suitable
18 desert wash habitat, which could not be quantified prior to the Final Solar PEIS. Pre-disturbance
19 surveys will be required to determine the observed locations and habitat suitability of the SEZ
20 for the Eastwood milkweed.
21

22 In addition, impacts on the eight BLM-designated sensitive species that were not
23 evaluated for the Gold Point SEZ in the Draft Solar PEIS are discussed below and in
24 Table 11.6.12.1-1. The impact assessment for these additional species was carried out in the
25 same way as for those species analyzed in the Draft Solar PEIS (Section 11.6.12.2 of the Draft
26 Solar PEIS).
27
28

29 **Golden Eagle.** The golden eagle was not analyzed for the Gold Point SEZ in the Draft
30 Solar PEIS. This species is an uncommon to common permanent resident in southern Nevada,
31 and potentially suitable foraging habitat is expected to occur in the affected area of the Gold
32 Point SEZ as revised. Approximately 4,500 acres (18 km²) of potentially suitable foraging
33 habitat on the SEZ could be directly affected by construction and operations (Table 11.6.12.1-1).
34 This direct effects area represents 0.1% of potentially suitable habitat in the SEZ region.
35 About 87,950 acres (356 km²) of potentially suitable foraging habitat occurs in the area of
36 indirect effects; this area represents about 2.6% of the available suitable foraging habitat in
37 the SEZ region (Table 11.6.12.1-1). Most of this area could serve as foraging habitat (open
38 shrublands). On the basis of an evaluation of SWReGAP land cover types, there is no suitable
39 nesting habitat within the SEZ, but approximately 350 acres (1.5 km²) of cliff and rock outcrop
40 habitat that may be potentially suitable nesting habitat occurs in the area of indirect effects.
41

42 The overall impact on the golden eagle from construction, operation, and
43 decommissioning of utility-scale solar energy facilities within the Gold Point SEZ is considered
44 small, because the amount of potentially suitable foraging habitat for this species in the area of
45 direct effects represents less than 1% of potentially suitable foraging habitat in the SEZ region.
46 The implementation of programmatic design features is expected to be sufficient to reduce

1 indirect impacts on this species to negligible levels. Avoidance of direct impacts on all
2 potentially suitable foraging habitat is not a feasible way to mitigate impacts on the golden eagle,
3 because potentially suitable shrubland is widespread throughout the area of direct effects and is
4 readily available in other portions of the affected area.
5
6

7 **Loggerhead Shrike.** The loggerhead shrike was not analyzed for the Gold Point SEZ in
8 the Draft Solar PEIS. This species is a common winter resident in lowlands and foothills of
9 southern Nevada. Approximately 4,490 acres (18 km²) of potentially suitable foraging habitat
10 on the SEZ could be directly affected by construction and operations (Table 11.6.12.1-1). This
11 direct effects area represents 0.1% of potentially suitable habitat in the SEZ region. About
12 88,000 acres (356 km²) of potentially suitable foraging habitat occurs in the area of
13 indirect effects; this area represents about 2.7% of the available suitable foraging habitat in
14 the SEZ region (Table 11.6.12.1-1).
15

16 The overall impact on the loggerhead shrike from construction, operation, and
17 decommissioning of utility-scale solar energy facilities within the Gold Point SEZ is considered
18 small, because the amount of potentially suitable foraging habitat for this species in the area of
19 direct effects represents less than 1% of potentially suitable foraging habitat in the SEZ region.
20 The implementation of programmatic design features is expected to be sufficient to reduce
21 indirect impacts on this species to negligible levels. Avoidance of direct impacts on all
22 potentially suitable foraging habitat is not a feasible way to mitigate impacts on the loggerhead
23 shrike, because potentially suitable shrubland is widespread throughout the area of direct effects
24 and readily available in other portions of the affected area.
25
26

27 **Long-Eared Owl.** The long-eared owl was not analyzed for the Gold Point SEZ in the
28 Draft Solar PEIS. This species is an uncommon to common permanent resident in southern
29 Nevada, and potentially suitable foraging habitat is expected to occur in the affected area of the
30 Gold Point SEZ. Approximately 4,500 acres (18 km²) of potentially suitable foraging habitat
31 could be directly affected by construction and operations (Table 11.6.12.1-1). This direct effects
32 area represents 0.1% of potentially suitable habitat in the SEZ region. About 87,700 acres
33 (355 km²) of potentially suitable foraging habitat occurs in the area of indirect effects; this area
34 represents about 2.7% of the available suitable foraging habitat in the SEZ region
35 (Table 11.6.12.1-1).
36

37 The overall impact on the long-eared owl from construction, operation, and
38 decommissioning of utility-scale solar energy facilities within the Gold Point SEZ is considered
39 small, because the amount of potentially suitable foraging habitat for this species in the area of
40 direct effects represents less than 1% of potentially suitable foraging habitat in the SEZ region.
41 The implementation of programmatic design features is expected to be sufficient to reduce
42 indirect impacts on this species to negligible levels. Avoidance of direct impacts on all
43 potentially suitable foraging habitat is not a feasible way to mitigate impacts on the long-eared
44 owl, because potentially suitable shrubland is widespread throughout the area of direct effects
45 and readily available in other portions of the affected area.
46

1 **Big Brown Bat.** The big brown bat is a fairly common year-round resident in southern
2 Nevada. This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS. Suitable
3 roosting habitat (caves, forests, and buildings) is not expected to occur on the SEZ, but the
4 availability of suitable roosting sites in the area of indirect effects has not been determined.
5 Approximately 4,560 acres (18 km²) of potentially suitable foraging habitat could be directly
6 affected by construction and operations (Table 11.6.12.1-1). This direct effects area represents
7 about 0.2% of potentially suitable foraging habitat in the region. About 63,400 acres (257 km²)
8 of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents
9 about 2.7% of the available suitable foraging habitat in the region (Table 11.6.12.1-1). On the
10 basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat
11 (forests and rock outcrops) does not occur on the SEZ. However, approximately 80 acres
12 (0.3 km²) of woodland habitat (pinyon-juniper) and 350 acres (1.5 km²) of cliff and rock outcrop
13 habitat that may be potentially suitable roosting habitat occur in the area of indirect effects.
14

15 The overall impact on the big brown bat from construction, operation, and
16 decommissioning of utility-scale solar energy facilities within the Gold Point SEZ is considered
17 small, because the amount of potentially suitable habitat for this species in the area of direct
18 effects represents less than 1% of potentially suitable habitat in the region. The implementation
19 of programmatic design features is expected to be sufficient to reduce indirect impacts on this
20 species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible
21 way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout
22 the area of direct effects and is readily available in other portions of the SEZ region.
23
24

25 **California Myotis.** The California myotis is a fairly common year-round resident in
26 southern Nevada. This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS.
27 Suitable roosting habitat (forests and rock outcrops) is not expected to occur on the SEZ, but the
28 availability of suitable roosting sites in the area of indirect effects has not been determined.
29 Approximately 4,570 acres (18 km²) of potentially suitable foraging habitat could be directly
30 affected by construction and operations (Table 11.6.12.1-1). This direct impact area represents
31 about 0.2% of potentially suitable foraging habitat in the region. About 75,000 acres (304 km²)
32 of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents
33 about 3.1% of the available suitable foraging habitat in the region (Table 11.6.12.1-1). On
34 the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting
35 habitat (forests and rock outcrops) does not occur on the SEZ or area of indirect effects
36 (Table 11.6.12.1-1). However, approximately 80 acres (0.3 km²) of woodland habitat (pinyon-
37 juniper) and 350 acres (1.5 km²) of cliff and rock outcrop habitat that may be potentially suitable
38 roosting habitat occur in the area of indirect effects.
39

40 The overall impact on the California myotis from construction, operation, and
41 decommissioning of utility-scale solar energy facilities within the Gold Point SEZ is considered
42 small, because the amount of potentially suitable habitat for this species in the area of direct
43 effects represents less than 1% of potentially suitable habitat in the region. The implementation
44 of programmatic design features is expected to be sufficient to reduce indirect impacts on this
45 species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible

1 way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout
2 the area of direct effects and is readily available in other portions of the SEZ region.
3
4

5 **Hoary Bat.** The hoary bat is a fairly common year-round resident in southern Nevada.
6 This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS. Suitable roosting
7 habitat (forests) is not expected to occur on the SEZ, but the availability of suitable roosting sites
8 in the area of indirect effects has not been determined. Approximately 250 acres (1 km²) of
9 potentially suitable foraging habitat on the SEZ could be directly affected by construction and
10 operations (Table 11.6.12.1-1). This direct effects area represents less than 0.1% of potentially
11 suitable foraging habitat in the region. About 8,400 acres (34 km²) of potentially suitable
12 foraging habitat occurs in the area of indirect effects; this area represents about 1.1% of the
13 available suitable foraging habitat in the region (Table 11.6.12.1-1). On the basis of an
14 evaluation of SWReGAP land cover types, potentially suitable roosting habitat (forests) does not
15 occur on the SEZ (Table 11.6.12.1-1). However, approximately 80 acres (0.3 km²) of woodland
16 habitat (pinyon-juniper) that may be potentially suitable roosting habitat occurs in the area of
17 indirect effects.
18

19 The overall impact on the hoary bat from construction, operation, and decommissioning
20 of utility-scale solar energy facilities within the Gold Point SEZ is considered small, because the
21 amount of potentially suitable habitat for this species in the area of direct effects represents less
22 than 1% of potentially suitable habitat in the region. The implementation of programmatic design
23 features is expected to be sufficient to reduce indirect impacts on this species to negligible levels.
24 Avoidance of all potentially suitable foraging habitat is not a feasible way to mitigate impacts,
25 because potentially suitable foraging habitat is widespread throughout the area of direct effects
26 and is readily available in other portions of the SEZ region.
27
28

29 **Long-Legged Myotis.** The long-legged myotis is a common to uncommon year-round
30 resident in southern Nevada. This species was not analyzed for the Gold Point SEZ in the Draft
31 Solar PEIS. Suitable roosting habitat (forests and rock outcrops) is not expected to occur on the
32 SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been
33 determined. Approximately 4,550 acres (18 km²) of potentially suitable foraging habitat on the
34 SEZ could be directly affected by construction and operations (Table 11.6.12.1-1). This direct
35 effects area represents about 0.2% of potentially suitable foraging habitat in the region. About
36 63,400 acres (257 km²) of potentially suitable foraging habitat occurs in the area of indirect
37 effects; this area represents about 2.8% of the available suitable foraging habitat in the region
38 (Table 11.6.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
39 suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However,
40 approximately 80 acres (0.3 km²) of woodland habitat (pinyon-juniper) and 350 acres (1.5 km²)
41 of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area
42 of indirect effects.
43

44 The overall impact on the long-legged myotis from construction, operation, and
45 decommissioning of utility-scale solar energy facilities within the Gold Point SEZ is considered
46 small, because the amount of potentially suitable habitat for this species in the area of direct

1 effects represents less than 1% of potentially suitable habitat in the region. The implementation
2 of programmatic design features is expected to be sufficient to reduce indirect impacts on this
3 species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible
4 way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout
5 the area of direct effects and is readily available in other portions of the SEZ region.
6
7

8 **Western Pipistrelle.** The western pipistrelle is a common year-round resident in southern
9 Nevada. This species was not analyzed for the Gold Point SEZ in the Draft Solar PEIS. Suitable
10 roosting habitat (forests and rock outcrops) is not expected to occur on the SEZ, but the
11 availability of suitable roosting sites in the area of indirect effects has not been determined.
12 Approximately 4,570 acres (18 km²) of potentially suitable foraging habitat on the SEZ could be
13 directly affected by construction and operations (Table 11.6.12.1-1). This direct effects area
14 represents about 0.1% of potentially suitable foraging habitat in the region. About 88,000 acres
15 (356 km²) of potentially suitable foraging habitat occurs in the area of indirect effects; this area
16 represents about 2.7% of the available suitable foraging habitat in the region (Table 11.6.12.1-1).
17 On the basis of an evaluation of SWReGAP land cover types, no suitable roosting habitat (forests
18 and rock outcrops) exists within the SEZ or within the area of indirect effects.
19

20 The overall impact on the western pipistrelle from construction, operation, and
21 decommissioning of utility-scale solar energy facilities within the Gold Point SEZ is considered
22 small, because the amount of potentially suitable habitat for this species in the area of direct
23 effects represents less than 1% of potentially suitable habitat in the region. The implementation
24 of programmatic design features is expected to be sufficient to reduce indirect impacts on this
25 species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible
26 way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout
27 the area of direct effects and is readily available in other portions of the SEZ region.
28
29

30 **11.6.12.3 SEZ-Specific Design Features and Design Feature Effectiveness**

31

32 Required programmatic design features are described in Section A.2.2 of Appendix A of
33 this Final Solar PEIS. SEZ-specific conditions will be considered when programmatic design
34 features are applied, for example:
35

- 36 • Pre-disturbance surveys shall be conducted within the SEZ to determine the
37 presence and abundance of special status species, including those identified
38 in Table 11.6.12.1-1 of the Draft Solar PEIS as well as those identified in
39 Table 11.6.12.1-1 of this Final Solar PEIS. Disturbance to occupied habitats
40 for these species shall be avoided or minimized to the extent practicable.
41 If avoiding or minimizing impacts on occupied habitats is not possible,
42 translocation of individuals from areas of direct effects or compensatory
43 mitigation of direct effects on occupied habitats may be used to reduce
44 impacts. A comprehensive mitigation strategy for special status species that
45 uses one or more of these options to offset the impacts of development shall
46 be developed in coordination with the appropriate federal and state agencies.

- 1 • Avoiding or minimizing disturbance to desert wash, playa, and sagebrush
2 habitats to reduce or eliminate impacts on two special status species.
3
- 4 • Coordination with the USFWS and the NDOW shall be conducted for the
5 greater sage-grouse (*Centrocercus urophasianus*)—a candidate species for
6 listing under the ESA. Coordination would identify an appropriate survey
7 protocol and mitigation requirements, which may include avoidance,
8 minimization, translocation, or compensation.
9

10 It is anticipated that the implementation of these programmatic design features will
11 reduce the majority of impacts on the special status species from habitat disturbance and
12 groundwater use.
13

14 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
15 comments received as applicable, no SEZ-specific design features have been identified for
16 special status species. Some SEZ-specific design features may be identified through the process
17 of preparing parcels for competitive offer and subsequent project-specific analysis.
18
19

20 **11.6.13 Air Quality and Climate**

21 **11.6.13.1 Affected Environment**

22

23 Except as noted below, the information for air quality and climate presented for the
24 affected environment of the Draft Solar PEIS remains essentially unchanged.
25
26

27 **11.6.13.1.1 Existing Air Emissions**

28

29 The Draft Solar PEIS presented emissions data for Esmeralda County for 2002. More
30 recent data for 2008 (EPA 2011a) were reviewed for this Final Solar PEIS. The two emissions
31 inventories used different sources and assumptions. For example, the 2008 data did not include
32 biogenic emissions. All emissions were lower in the more recent data. These changes would not
33 affect the modeled air quality impacts presented in this update.
34
35
36

37 **11.6.13.1.2 Air Quality**

38

39 The calendar quarterly average NAAQS of 1.5 µg/m³ for lead (Pb) presented in
40 Table 11.6.13.1-2 of the Draft Solar PEIS has been replaced by the rolling 3-month standard
41 (0.15 µg/m³). The federal 24-hour and annual SO₂ and 1-hour O₃ standards have been revoked
42 as well (EPA 2011b). These changes will not affect the modeled air quality impacts presented
43 here. The Nevada SAAQS have not been changed.
44
45
46

1 **11.6.13.2 Impacts**

2
3
4 **11.6.13.2.1 Construction**

5
6
7 **Methods and Assumptions**

8
9 Except as noted below, the methods and modeling assumptions are the same as those
10 presented in the Draft Solar PEIS. The developable area of the proposed Gold Point SEZ was
11 reduced by about 4%, from 4,810 acres (19.5 km²) to 4,596 acres (18.6 km²), a change too small
12 to affect the results presented here. Given this small change, remodeling was not warranted, and
13 the modeled air quality impacts and conclusions presented in the Draft Solar PEIS (as
14 summarized below) remain valid.¹

15
16
17 **Results**

18
19 Predicted 24-hour and annual PM₁₀ and 24-hour PM_{2.5} concentration levels could exceed
20 the standard levels at the SEZ boundaries and in the immediate surrounding areas during the
21 construction of solar facilities. To reduce potential impacts on ambient air quality and in
22 compliance with programmatic design features, aggressive dust control measures would be used.
23 Potential particulate air quality impacts on nearby communities would not exceed standard
24 levels. Impacts from construction activities are not anticipated to exceed Class I PSD PM₁₀
25 increments at the nearest federal Class I area (John Muir WA in California). Construction
26 activities are not subject to the PSD program, and the comparison provides only a screen for
27 gauging the magnitude of the impact. Accordingly, it is anticipated that impacts of construction
28 activities on ambient air quality would be moderate and temporary.

29
30 Given the small areal change, emissions from construction equipment and vehicles would
31 be almost the same as those identified in the Draft Solar PEIS. Any potential impacts on AQRVs
32 at nearby federal Class I areas would be about the same as those estimated in the Draft Solar
33 PEIS, and the conclusions there remain valid. Construction-related emissions are temporary in
34 nature and thus would cause some unavoidable but short-term impacts.

35
36
37

¹ At this programmatic level, detailed information on construction activities, such as facility size, type of solar technology, heavy equipment fleet, activity level, work schedule, and the like, is not known; thus air quality modeling cannot be conducted. Therefore, it has been assumed that an area of 3,000 acres (12.14 km²) in total would be disturbed continuously; 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 predicted impacts on ambient air quality for specific projects would be much lower than those in this Final Solar PEIS.

1 **11.6.13.2.2 Operations**

2
3 The reduction in developable area of the Gold Point SEZ by about 4% reduces the
4 generation capacity and annual power generation by a similar percentage and thus reduces the
5 potentially avoided emissions presented in the Draft Solar PEIS. Updated estimates for
6 emissions potentially avoided by full solar development of the proposed Gold Point SEZ can be
7 obtained from the table in the Draft Solar PEIS by reducing the tabulated emissions shown in
8 Table 11.6.13.2-2 of the Draft Solar PEIS by 4.4%. For example, depending on the technology
9 used, up to 866 tons per year of NO_x (= 95.6% × the lower-end value of 906 tons/yr tabulated in
10 the Draft Solar PEIS) could be avoided by full solar development of the proposed Gold Point
11 SEZ as revised. These tabulated results are consistent with, but slightly smaller than, the results
12 presented in the Draft Solar PEIS. Solar facilities built in the Gold Point SEZ could be more
13 important than those built in other states in terms of reducing fuel combustion–related emissions.
14

15
16 **11.6.13.2.3 Decommissioning and Reclamation**

17
18 The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation
19 activities would be of short duration, and their potential impacts would be moderate and
20 temporary.
21

22
23 **11.6.13.3 SEZ-Specific Design Features and Design Feature Effectiveness**

24
25 Required programmatic design features that would reduce air quality impacts are
26 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Limiting dust generation
27 during construction and operations is a required programmatic design feature under the BLM
28 Solar Energy Program. These extensive fugitive dust control measures would keep off-site PM
29 levels as low as possible during construction.
30

31 On the basis of impact analyses conducted for the Draft Solar and consideration of
32 comments received as applicable, no SEZ-specific design features for air quality have been
33 identified. Some SEZ-specific design features may be identified through the process of preparing
34 parcels for competitive offer and subsequent project-specific analysis.
35

36
37 **11.6.14 Visual Resources**

38
39
40 **11.6.14.1 Affected Environment**

41
42 No boundary revisions were identified for the proposed SEZ within the Supplement to
43 the Draft Solar PEIS; however, a non-development area was identified. For the proposed SEZ,
44 214 acres (0.87 km²) along a significant unnamed intermittent stream passing east–west through
45 the center of the SEZ was identified as a non-development area. The remaining developable area
46 within the SEZ is 4,596 acres (18.6 km²).

1 VRI information was not available at the time of publication of the Draft Solar PEIS.
2 Since that time, VRI data have been collected and finalized. A map for the SEZ and surrounding
3 lands is shown in Figure 11.6.14.1-1; it provides information collected in BLM's 2010 and 2011
4 VRI, which was finalized in October 2011 (BLM 2011b). As shown, the VRI values for the SEZ
5 are primarily VRI Class IV, indicating low visual values; however, a portion at the southern end
6 of the SEZ is VRI Class II, indicating relatively high visual values. The inventory indicates
7 moderate scenic quality for the SEZ and its immediate surroundings. Positive scenic quality
8 attributes included its vegetation, color, and adjacent scenery. The Lida Valley is characterized
9 as a typical flat-bottomed area. The inventory indicates low sensitivity for the SEZ. However,
10 immediately to the south of the SEZ, the town of Gold Point is located within an area
11 characterized as highly sensitive due to the presence of the old mining town.

12
13 In accordance with the collected VRI information, lands in the Battle Mountain District
14 Office within the 25-mi (40-km), 650-ft (198-m) viewshed of the SEZ include 48,146 acres
15 (195.9 km²) of VRI Class II areas; 26,458 acres (107.1 km²) of VRI Class III areas; and
16 133,607 acres (540.7 km²) of VRI Class IV areas.

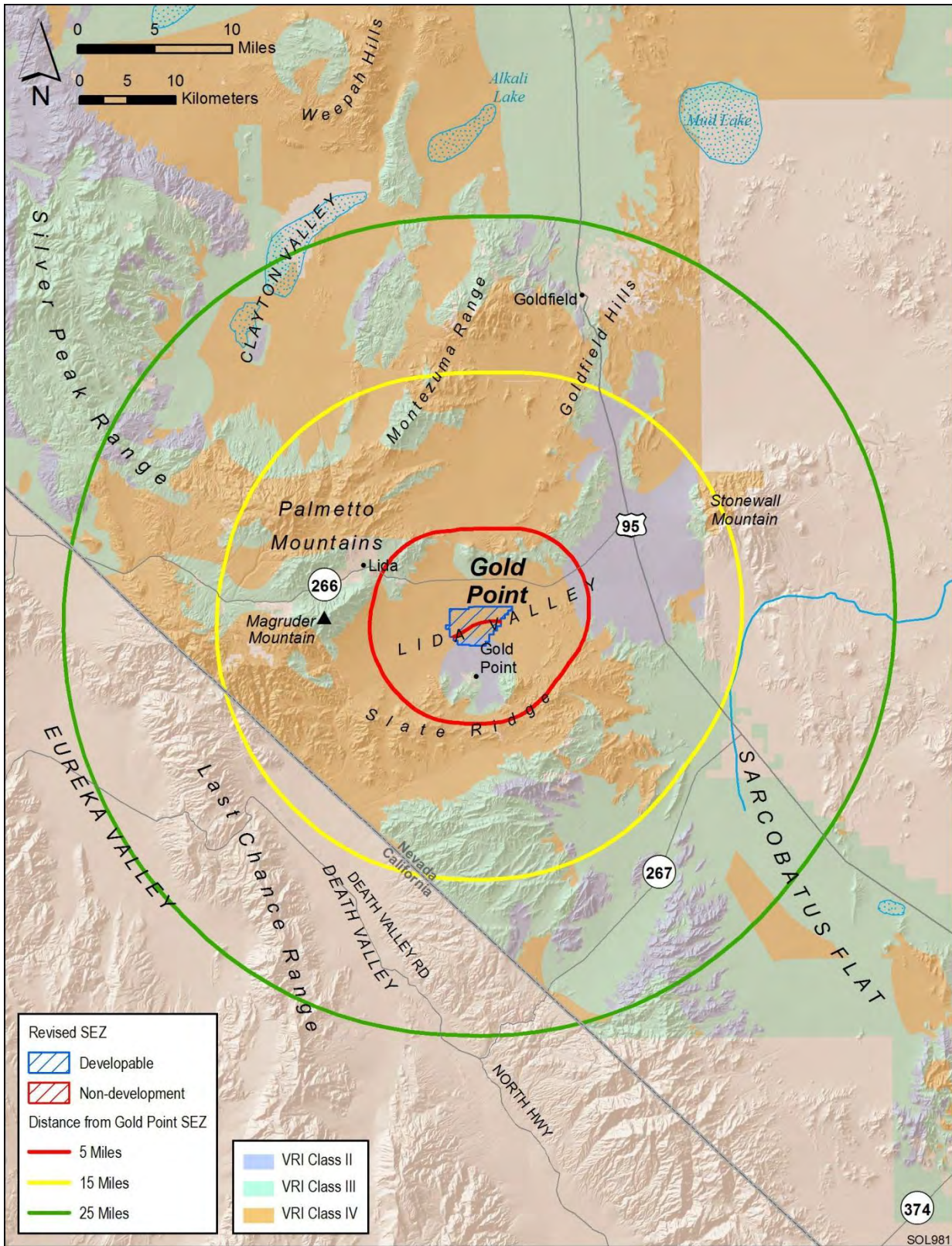
17
18 As indicated in the Draft Solar PEIS, the Tonopah RMP (BLM 1997) indicates that the
19 SEZ and surrounding area are managed as VRM Class IV, which permits major modification of
20 the existing character of the landscape. Since the publication of the Draft Solar PEIS, the Battle
21 Mountain District Office has been preparing a new comprehensive RMP and associated EIS. The
22 RMP/EIS will replace the existing 1997 Tonopah RMP and 1986 Shoshone-Eureka RMP. The
23 RMP revision process began in December 2010 (BLM 2011a).

24 25 26 **11.6.14.2 Impacts**

27
28 The summary of impacts provided in the Draft Solar PEIS remains valid, as follows.
29 Development within the SEZ could create a visually complex landscape that would contrast
30 strongly with the strongly horizontal landscape of the flat valley in which the SEZ is located.
31 Large visual impacts on the SEZ and surrounding lands within the SEZ viewshed would be
32 associated with solar energy development within the proposed Gold Point SEZ because of major
33 modification of the character of the existing landscape. The potential exists for additional
34 impacts from construction and operation of transmission lines and access roads within and
35 outside the SEZ.

36
37 Utility-scale solar energy development within the proposed Gold Point SEZ is likely to
38 result in moderate visual contrasts for some viewpoints within the Queer Mountain WSA, which
39 is within 7 mi (11 km) of the SEZ at the point of closest approach. Moderate visual contrast
40 levels would also be expected for viewpoints on Magruder Mountain. Minimal to weak visual
41 contrasts would be expected for some viewpoints within other sensitive visual resource areas
42 within the SEZ 25-mi (40-km) viewshed.

43
44 Residents of the community of Gold Point would likely experience strong visual contrasts
45 from solar energy development within the SEZ. About 18 mi (29 km) of State Route 266 are
46 within the SEZ viewshed at distances of 2 to 9.5 mi (3.2 to 15.3 km) from the SEZ. Travelers on



2 **FIGURE 11.6.14.1-1 Visual Resource Inventory Values for the Proposed Gold Point SEZ as**
 3 **Revised**

1 State Route 266 could be subjected to strong visual contrasts from solar energy development
2 within the SEZ. Visitors to the area, workers, and residents of the community of Gold Point may
3 experience visual impacts from solar energy facilities located within the SEZ (as well as any
4 associated access roads and transmission lines) as they travel other area roads.
5
6

7 **11.6.14.3 SEZ-Specific Design Features and Design Feature Effectiveness**

8

9 Required programmatic design features that would reduce impacts on visual resources are
10 described in Section A.2.2 of Appendix A of this Final Solar PEIS. While application of the
11 programmatic design features would reduce potential visual impacts somewhat, the degree of
12 effectiveness of these design features could be assessed only at the site- and project-specific
13 level. Given the large scale, reflective surfaces, and strong regular geometry of utility-scale solar
14 energy facilities and the lack of screening vegetation and landforms within the SEZ viewshed,
15 siting the facilities away from sensitive visual resource areas and other sensitive viewing areas
16 would be the primary means of mitigating visual impacts. The effectiveness of other visual
17 impact mitigation measures generally would be limited.
18

19 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
20 comments received as applicable, no SEZ-specific design features to address impacts on visual
21 resources have been identified in this Final Solar PEIS. Some SEZ-specific design features may
22 be identified through the process of preparing parcels for competitive offer and subsequent
23 project-specific analysis.
24
25

26 **11.6.15 Acoustic Environment**

27

28 **11.6.15.1 Affected Environment**

29

30
31 The developable area of the proposed Gold Point SEZ was reduced by about 4% from
32 4,810 acres (19.5 km²) to 4,596 acres (18.6 km²); the boundaries of the SEZ were not changed,
33 and thus the information for acoustic environment remains the same as presented in the Draft
34 Solar PEIS.
35
36

37 **11.6.15.2 Impacts**

38

39 **11.6.15.2.1 Construction**

40

41
42 Since the boundaries of the proposed Gold Point SEZ remain unchanged and the
43 reduction in the developable area was small, the noise impacts from solar development in the
44 proposed Gold Point SEZ remain the same as those presented in the Draft Solar PEIS.
45 Construction within the SEZ would cause minimal unavoidable, but localized, short-term noise

1 impacts on neighboring communities. No adverse vibration impacts are anticipated from
2 construction activities, including pile driving for dish engines.

3 4 5 ***11.6.15.2.2 Operations*** 6

7 The conclusions presented in the Draft Solar PEIS remain valid. Operating parabolic
8 trough or power tower facilities using TES could result in some adverse noise impacts on the
9 nearest residences, depending on background noise levels and meteorological conditions. In the
10 permitting process, refined noise propagation modeling considering topographical features might
11 be warranted, along with measurement of background noise levels.

12
13 Noise from dish engines could cause some adverse impacts on the nearest residences,
14 depending on background noise levels and meteorological conditions. Thus, consideration of
15 minimizing noise impacts is very important in the siting of dish engine facilities. Direct
16 mitigation of dish engine noise through noise control engineering could also be considered.

17
18 Small changes in the developable area of the proposed SEZ would not affect the
19 discussions of vibration, transformer and switchyard noise, and transmission line corona
20 discharge presented in the Draft Solar PEIS. Noise impacts from these sources would be
21 negligible.

22 23 24 ***11.6.15.2.3 Decommissioning and Reclamation*** 25

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

29 30 31 **11.6.15.3 SEZ-Specific Design Features and Design Feature Effectiveness** 32

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

36
37 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
38 comments received as applicable, the following SEZ-specific design feature was identified for
39 noise:

- 40
41 • Because of the differences in elevation between the proposed Gold Point SEZ
42 and nearby residences to the south, refined modeling will be warranted along
43 with background noise measurements as a part of project-specific analyses.
44

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

1 **11.6.16 Paleontological Resources**

2
3
4 **11.6.16.1 Affected Environment**

5
6 Data provided in the Draft Solar PEIS remain valid, with the following update:

- 7
8 • The BLM Regional Paleontologist may have additional information on the
9 paleontological potential of the SEZ and be able to verify the PFYC of the
10 SEZ as Class 2 as used in the Draft Solar PEIS.
11

12
13 **11.6.16.2 Impacts**

14
15 The assessment provided in the Draft Solar PEIS remains valid. Few, if any, impacts on
16 significant paleontological resources are likely to occur in the proposed Gold Point SEZ.
17 However, a more detailed look at the geological deposits of the SEZ is needed to determine
18 whether a paleontological survey is warranted.
19

20
21 **11.6.16.3 SEZ-Specific Design Features and Design Feature Effectiveness**

22
23 Required programmatic design features that would reduce impacts on paleontological
24 resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Impacts would
25 be minimized through the implementation of required programmatic design features, including a
26 stop-work stipulation in the event that paleontological resources are encountered during
27 construction, as described in Section A.2.2 of Appendix A.
28

29 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
30 comments received as applicable, no SEZ-specific design features for paleontological resources
31 have been identified. If the geologic deposits in the proposed Gold Point SEZ are determined to
32 be thick alluvial deposits as described in Section 11.6.16.1 of the Draft Solar PEIS and are
33 classified as PFYC Class 2, mitigation of paleontological resources within the SEZ is not likely
34 to be necessary. The need for and nature of any SEZ-specific design features would depend on
35 the results of future paleontological investigations. Some SEZ-specific design features may be
36 identified through the process of preparing parcels for competitive offer and subsequent project-
37 specific analysis.
38

39 As additional information on paleontological resources (e.g., from regional
40 paleontologists or from new surveys) becomes available, the BLM will post the data to the
41 project Web site (<http://solareis.anl.gov>) for use by applicants, the BLM, and other stakeholders.
42
43
44

1 **11.6.17 Cultural Resources**

2
3
4 **11.6.17.1 Affected Environment**

5
6 Data provided in the Draft Solar PEIS remain valid, with the following updates:

- 7
8
- 9 • A tribally approved ethnographic study of the proposed Gold Point SEZ was
10 conducted with the Timbisha Shoshone Tribe (SWCA and University of
11 Arizona 2011), and a summary of that study was presented in the Supplement
12 to the Draft Solar PEIS. Important ceremonial areas near the SEZ include
13 Pigeon Spring and possibly Indian Spring, as well as Doctor Rock and Red
14 Volcano. Culturally important geologic features in the vicinity of the SEZ
15 include Mount Jackson, Stonewall Mountain, Magruder Mountain, Mount
16 Jackson Ridge, Tule Canyon, and Mount Dunfee. Tribal members
17 acknowledged that numerous trail systems intersect the Gold Point study area.
18 The completed ethnographic study is available in its entirety on the Solar
19 PEIS Web site (<http://solareis.anl.gov>)

 - 20 • Additional information to characterize the area surrounding the proposed SEZ
21 may be available in the future (after the Final Solar PEIS has been completed),
22 as follows:
 - 23 – Results of a Class I literature file search to better understand (1) the site
24 distribution pattern in the vicinity of the SEZ, (2) trail networks through
25 existing ethnographic reports, and (3) overall cultural sensitivity of the
26 landscape.
 - 27 – Results of a Class II stratified random sample survey of 230 acres
28 (0.9 km²) or roughly 5% of the SEZ. The Class II survey is being
29 conducted by the BLM to meet its ongoing Section 110 responsibilities
30 under the NHPA. The objectives of the Class II surveys currently under
31 contract are to reliably predict the density, diversity, and distribution of
32 archaeological sites within each SEZ in Arizona, California, and Nevada
33 and create sensitivity zones based on projected site density, complexity,
34 likely presence of human burials, and/or other tribal concerns. The BLM
35 will continue to request funding to support additional Class II sample
36 inventories in the SEZ areas. Areas of interest, such as historic resources
37 pertaining to mining, as determined through a Class I review, and, if
38 appropriate, some subsurface testing of dune and/or colluvium areas
39 should be considered in sampling strategies for future surveys.
 - 40 – Continuation of government-to-government consultation as described in
41 Section 2.4.3 of the Supplement to the Draft Solar PEIS and IM 2012-032
42 (BLM 2011c) may be continued, including follow-up to recent
43 ethnographic studies covering some SEZs in Nevada and Utah with tribes
44 not included in the original studies to determine whether those tribes have
45 similar concerns.
- 46

1 **11.6.17.2 Impacts**
2

3 As stated in the Draft Solar PEIS, impacts on significant cultural resources could occur
4 in the proposed Gold Point SEZ; however, further investigation is needed. For this updated
5 analysis, impacts on the Goldfield Historic District are no longer projected, because a new
6 transmission line close to that area is no longer assumed. However, on the basis of the new
7 ethnographic study, impacts on Native American trail networks are possible.
8
9

10 **11.6.17.3 SEZ-Specific Design Features and Design Feature Effectiveness**
11

12 Required programmatic design features that would reduce impacts on cultural resources
13 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Programmatic design
14 features assume that the necessary surveys, evaluations, and consultations will occur. Design
15 features for visual resources would also reduce some impacts on cultural resources, especially
16 for the Gold Point Town site.
17

18 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
19 comments received as applicable, no SEZ-specific design features for cultural resources have
20 been identified. SEZ-specific design features would be determined in consultation with the
21 Nevada SHPO and affected tribes and would depend on the results of future investigations.
22 Information in the ethnographic reports would suggest that impacts on Pigeon Spring, Doctor
23 Rock, Red Volcano, Mount Jackson, Stonewall Mountain, Magruder Mountain, Mount Jackson
24 Ridge, Tule Canyon, and Mount Dunfee, trail systems, and culturally sensitive plant and
25 animal species would need to be avoided, minimized, or otherwise mitigated if solar energy
26 development were to be initiated in the proposed Gold Point SEZ. Some SEZ-specific design
27 features may be identified through the process of preparing parcels for competitive offer and
28 subsequent project-specific analysis.
29
30

31 **11.6.18 Native American Concerns**
32

33 **11.6.18.1 Affected Environment**
34

35 Data provided in the Draft Solar PEIS remain valid, with the following updates:
36
37

- 38 • A tribally approved ethnographic study of the proposed Gold Point SEZ and
39 surrounding landscape was conducted with the Timbisha Shoshone Tribe
40 (SWCA and University of Arizona 2011), and a summary of that study was
41 presented in the Supplement to the Draft Solar PEIS. Important ceremonial
42 areas identified near the SEZ include Pigeon Spring and possibly Indian
43 Spring, as well as Doctor Rock and Red Volcano. Culturally important
44 geologic features in the vicinity of the SEZ include Mount Jackson, Stonewall
45 Mountain, Magruder Mountain, Mount Jackson Ridge, Tule Canyon, and
46 Mount Dunfee. Tribal members acknowledged that numerous trail systems

1 intersect the Gold Point study area, and several culturally important plant and
2 animal species. The completed ethnographic study is available in its entirety
3 on the Solar PEIS Web site (<http://solareis.anl.gov>).
4

- 5 • The tribal representatives from the Timbisha Shoshone Tribe believe that all
6 cultural resources and landscapes within and surrounding the proposed Gold
7 Point SEZ are important in helping the tribes understand their past, present,
8 and future.
9
- 10 • Major concerns of the tribal representatives of the Timbisha Shoshone Tribe
11 include the potential destruction of traditional plant and animal habitat, the
12 amount of water that will be needed to sustain the solar facility and where it
13 will come from, and the effect of solar energy development on Doctor Rock
14 and the surrounding valley.
15
- 16 • Areas that contain evidence of volcanic activity have been identified as
17 culturally important parts of the landscape. Volcanic events are thought to
18 bring new *Puha* to the surface of the Earth. *Puha* follows the flow of magma,
19 as it does with water, connecting places and elements. Doctor Rock is an
20 example of volcanic *Puha*, although other places exist throughout the valley.
21
- 22 • Saline Valley has been identified as the creation point of the Shoshone people.
23 Saline Valley is located approximately 52 mi (84 km) southwest of the
24 proposed SEZ, west of Death and Eureka Valleys.
25
- 26 • Pigeon Springs, Shakespeare’s Spring, Jackson Wash, and the Stonewall
27 Mountain Hydrological System have been identified as important water
28 sources. In particular, Pigeon Spring has been identified as a small Shoshone
29 settlement and the location of an important community Round Dance in 1890.
30 Tribal representatives described the Round Dance as a “Death Dance” meant
31 to prepare the Shoshone for death and destruction by European and American
32 soldiers. Early ethnographies describe the Round Dance as a world-balancing
33 ceremony similar to the Ghost Dance.
34
- 35 • The following traditional plants have been identified in addition to those listed
36 in Table 11.6.18.1-2 of the Draft Solar PEIS: buckbrush (*Purshia glandulosa*),
37 bud sagebrush (*Picrothamnus desertorum*), creosote (*Larrea tridentate*),
38 desert Indian paintbrush (*Castilleja angustifolia*), desert prince’s plume/Indian
39 spinach (*Stanleya pinnata*), Gold cholla/silver cholla (*Opuntia echinocarpa*),
40 hairspine pricklypear (*Opuntia polyacantha*), horsebrush (*Tetradymia* sp.),
41 Indian ricegrass (*Achnatherum hymenoides*), Indian tea (*Ephedra viridis*),
42 locoweed (*Astragalus* sp.), orange lichen (*Caloplaca trachyphylla*),
43 rattlesnake weed, rubber rabbitbrush (*Ericameria nauseosa*), shadescale
44 (*Atriplex confertifolia*), and spiny menodora (*Mendora spinescens*).
45

- 1 • The following traditional animals have been identified in addition to those
2 listed in Table 11.6.18.1-3 of the Draft Solar PEIS: American kestrel (*Falco*
3 *sparverius*), killdeer (*Charadrius vociferous*), red-tailed hawk (*Buteo*
4 *jamaicensis*), and long-nosed leopard lizard (*Gambelia wislizenii*).
5
6

7 **11.6.18.2 Impacts**

8

9 The description of potential concerns provided in the Draft Solar PEIS remains valid. In
10 the past, the Western Shoshone and Owens Valley Paiute have expressed concerns over project
11 impacts on a variety of resources. While no comments specific to the proposed Gold Point SEZ
12 have been received from Native American tribes to date, the Big Pine Paiute Tribe of the Owens
13 Valley has commented on the scope of this PEIS. The tribe recommends that the BLM preserve
14 undisturbed lands intact and that recently disturbed lands such as abandoned farm fields, rail
15 yards, mines, and airfields be given primary consideration for solar energy development.
16 Potential impacts on water supply are also a concern (Moose 2009). The construction of utility-
17 scale solar energy facilities within the proposed SEZ would result in the destruction of some
18 plants important to Native Americans and the habitat of some traditionally important animals.
19

20 In addition to the impacts discussed in the Draft Solar PEIS, the ethnographic study
21 conducted for the proposed Gold Point SEZ identified the following impacts:
22

- 23 • Development within the proposed Gold Point SEZ will result in visual
24 impacts on the valley when viewed from Magruder Mountain, Mount Jackson,
25 Red Volcano, Doctor Rock, and Stonewall Mountain.
26
27 • Development within the proposed Gold Point SEZ may affect the spiritual
28 connection of the Shoshone with water and magma through *Puha*. This
29 possibility is especially true for developments near water sources such as
30 Jackson Wash or near prominent volcanic features located within the SEZ.
31
32 • Development within the proposed Gold Point SEZ will likely adversely affect
33 Jackson Wash, because several large segments of the wash are spread
34 throughout the proposed SEZ.
35
36 • Development within the proposed SEZ will directly affect culturally important
37 plant and animal resources, because it will likely require the grading of the
38 project area, the removal of vegetation, and the destruction of burrows, nests,
39 and migratory habitat.
40
41

42 **11.6.18.3 SEZ-Specific Design Features and Design Feature Effectiveness**

43

44 Tribal representatives believe that solar energy development within the Gold Point SEZ
45 will have adverse impacts on water, culturally important geologic features, and traditionally
46 important plant and animal resources (SWCA and University of Arizona 2011). Required

1 programmatic design features that would reduce impacts on resources of concern to Native
2 Americans are described in Section A.2.2 of Appendix A of this Final Solar PEIS. For example,
3 impacts will be minimized through the avoidance of sacred sites, water sources, and tribally
4 important plant and animal species. Programmatic design features require that the necessary
5 surveys, evaluations, and consultations would occur. The Tribes would be notified regarding the
6 results of archaeological surveys, and they would be contacted immediately upon the discovery
7 of Native American human remains and associated cultural items.
8

9 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
10 comments received as applicable, no SEZ-specific design features to address Native American
11 concerns have been identified. The need for and nature of SEZ-specific design features would be
12 determined during government-to-government consultation with affected tribes as part of the
13 process of preparing parcels for competitive offer and subsequent project specific analysis.
14 Potentially significant sites and landscapes in the vicinity of the SEZ associated with trails and
15 trail features, Pigeon Spring, Indian Spring, Mount Jackson, Mount Jackson Ridge, Mount
16 Dunfee, Magruder Mountain, Stonewall Mountain, Doctor Rock, Red Volcano, Lida Valley, and
17 Tule Canyon, as well as other rock art sites, ceremonial areas and healing places, places of
18 historic encounters, and plant and animal resources, should be considered and discussed during
19 consultation.
20

21 22 **11.6.19 Socioeconomics**

23 24 25 **11.6.19.1 Affected Environment**

26
27 The boundaries of the proposed Gold Point SEZ have not changed. The socioeconomic
28 ROI, the area in which site employees would live and spend their wages and salaries, and into
29 which any in-migration would occur, includes the same counties and communities as described
30 in the Draft Solar PEIS, meaning that no updates to the affected environment information given
31 in the Draft Solar PEIS are required.
32

33 34 **11.6.19.2 Impacts**

35
36 Socioeconomic resources in the ROI around the SEZ could be affected by solar energy
37 development through the creation of direct and indirect employment and income, the generation
38 of direct sales and income taxes, SEZ acreage rental and capacity payments to the BLM, the
39 in-migration of solar facility workers and their families, and impacts on local housing markets
40 and local community service employment. Since the boundaries of the proposed Gold Point SEZ
41 remain unchanged and the reduction of the developable area was small (less than 5%), the
42 impacts estimated in the Draft Solar PEIS remain valid. During construction, between 124 and
43 1,641 jobs and between \$10.5 and \$139 million in income could be associated with solar
44 development in the SEZ. During operations at full build-out, between 8 and 160 jobs and
45 between \$0.3 million and \$7.2 million in income could be produced. In-migration of workers

1 and their families would mean between 48 and 631 rental housing units would be needed during
2 construction and between 3 and 63 owner-occupied units during operations.
3
4

5 **11.6.19.3 SEZ-Specific Design Features and Design Feature Effectiveness**

6

7 Required programmatic design features that would reduce socioeconomic impacts are
8 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
9 programmatic design features will reduce the potential for socioeconomic impacts during all
10 project phases.
11

12 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
13 comments received as applicable, no SEZ-specific design features to address socioeconomic
14 impacts have been identified. Some SEZ-specific design features may be identified through the
15 process of preparing parcels for competitive offer and subsequent project-specific analysis.
16
17

18 **11.6.20 Environmental Justice**

19
20

21 **11.6.20.1 Affected Environment**

22

23 The data presented in the Draft Solar PEIS for the proposed Gold Point SEZ have not
24 changed substantially. There are no minority or low-income populations in the Nevada or
25 California portions of the 50-mi (80-km) radius of the SEZ.
26
27

28 **11.6.20.2 Impacts**

29

30 Potential impacts (e.g., from noise and dust during construction and operations, visual
31 impacts, cultural impacts, and effects on property values) on low-income and minority
32 populations could be incurred as a result of the construction and operation of solar facilities
33 involving each of the four technologies. Impacts are likely to be small, and there are no minority
34 populations defined by CEQ guidelines(CEQ 1997) or low-income populations (see
35 Section 11.6.20.1 of the Draft Solar PEIS) within the 50-mi (80-km) radius around the boundary
36 of the SEZ. This means that any adverse impacts of solar projects could not disproportionately
37 affect minority and/or low-income populations.
38
39

40 **11.6.20.3 SEZ-Specific Design Features and Design Feature Effectiveness**

41

42 Required programmatic design features that would reduce potential environmental justice
43 impacts are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
44 programmatic design features will reduce the potential for such impacts.
45

1 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
2 comments received as applicable, no SEZ-specific design features for environmental justice
3 impacts have been identified. Some SEZ-specific design features may be identified through the
4 process of preparing parcels for competitive offer and subsequent project-specific analysis.
5
6

7 **11.6.21 Transportation**

8
9

10 **11.6.21.1 Affected Environment**

11

12 The reduction of about 4% in developable area of the proposed Gold Point SEZ does not
13 change the information on affected environment for transportation provided in the Draft Solar
14 PEIS.
15

16 **11.6.21.2 Impacts**

17
18

19 As stated in the Draft Solar PEIS, the primary transportation impacts are anticipated to
20 be from commuting worker traffic. Single projects could involve up to 1,000 workers each day,
21 with an additional 2,000 vehicle trips per day (maximum). The increase in the volume of traffic
22 on U.S. 95 east of the proposed Gold Point SEZ, on State Route 266 past the northern border of
23 the SEZ, and along State Route 744 along the eastern edge of the SEZ would represent increases
24 in traffic of about 100%, 1,000%, and 10,000%, respectively. Also, higher traffic volumes would
25 be experienced during shift changes. Thus, traffic on U.S. 95 could experience slowdowns
26 during these periods in the vicinity of the junction with State Route 266, and local road
27 improvements would be necessary on State Routes 266 and 774 in order not to overwhelm the
28 local access roads near any site access points.
29

30 Solar development within the SEZ would affect public access along OHV routes that are
31 designated open and available for public use. Although open routes crossing areas granted
32 ROWs for solar facilities could be redesignated as closed (see Section 5.5.1 of the Draft Solar
33 PEIS), a programmatic design feature has been included under Recreation (Section A.2.2.6.1 of
34 Appendix A) that requires consideration of replacement of lost OHV route acreage and of access
35 across and to public lands.
36
37

38 **11.6.21.3 SEZ-Specific Design Features and Design Feature Effectiveness**

39

40 Required programmatic design features that would reduce transportation impacts are
41 described in Section A.2.2 of Appendix A of this Final Solar PEIS. The programmatic design
42 features, including local road improvements, multiple site access locations, staggered work
43 schedules, and ride-sharing, would all provide some relief to traffic congestion on local roads
44 leading to the SEZ. Depending on the location of solar facilities within the SEZ, more specific
45 access locations and local road improvements could be implemented.
46

1 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
2 comments received as applicable, no SEZ-specific design features to address transportation
3 impacts have been identified. Some SEZ-specific design features may be identified through the
4 process of preparing parcels for competitive offer and subsequent project-specific analysis.
5
6

7 **11.6.22 Cumulative Impacts**

8

9 The analysis of potential impacts in the vicinity of the proposed Gold Point SEZ
10 presented in the Draft Solar PEIS is still generally applicable for this Final Solar PEIS. The size
11 of the developable area of the proposed SEZ has been reduced by about 4%. The following
12 sections include an update to the information presented in the Draft Solar PEIS regarding
13 cumulative effects for the proposed Gold Point SEZ.
14
15

16 **11.6.22.1 Geographic Extent of the Cumulative Impact Analysis**

17

18 The geographic extent of the cumulative impact analysis has not changed. The extent
19 varies on the basis of the nature of the resource being evaluated and the distance at which the
20 impact may occur (e.g., impacts on air quality may have a greater geographic extent than impacts
21 on visual resources). The BLM, the NPS, the DOE, and the DoD administer most of the land
22 around the SEZ. The BLM administers approximately 47% of the lands within a 50-mi (80-km)
23 radius of the SEZ.
24
25

26 **11.6.22.2 Overview of Ongoing and Reasonably Foreseeable Future Actions**

27

28 The Draft Solar PEIS included six other proposed SEZs in Nevada. Two of these, the
29 Delamar Valley SEZ and the East Mormon Mountain SEZ, have been removed from
30 consideration.
31

32 There are no reasonably foreseeable future actions related to energy development and
33 distribution near the proposed Gold Point SEZ.
34

35 The list of other major ongoing and foreseeable future actions within 50 mi (80 km) of
36 the proposed Gold Point SEZ has been updated and is presented in Table 11.6.22.2-1. Projects
37 listed in the table are shown in Figure 11.6.22.2-1.
38
39

40 **11.6.22.3 General Trends**

41

42 The information on general trends presented in the Draft Solar PEIS remains valid.
43
44

1 **TABLE 11.6.22.2-1 Ongoing and Reasonably Foreseeable Future Actions Related to Energy**
 2 **Development and Distribution and Other Major Actions near the Proposed Gold Point SEZ as**
 3 **Revised^a**

Description	Status	Resources Affected	Primary Impact Location
Beatty Water and Sanitation District Water Treatment Plant	Operating^b	Drinking water	43 mi ^c southeast of the SEZ
Chemetall Foote Lithium Carbonate Facility Expansion	Under construction^d	Terrestrial habitats, wildlife, air quality	25 mi northwest of the SEZ
Mineral Ridge Project	Mining has resumed^e	Terrestrial habitats, water, air quality	28 mi northwest of the SEZ
Caliente Rail Realignment	FEIS June 2008	Terrestrial habitats, wildlife, cultural resources	8 mi northwest of the SEZ
120-kV Transmission Line	Operating	Disturbed areas, terrestrial habitats along transmission line ROW	Corridor passes from east to west–north of the SEZ
120-kV Transmission Line	Operating	Disturbed areas, terrestrial habitats along transmission line ROW	Corridor passes from north to south–north of the SEZ
Producing Geothermal Lease (NVN 8421)	Operating	Terrestrial habitats, wildlife	45 mi (72 km) northwest of the SEZ
Producing Geothermal Lease (NVN 8428)	Operating	Terrestrial habitats, wildlife	45 mi (72 km) northwest of the SEZ
Producing Geothermal Lease (NVN 9647)	Operating	Terrestrial habitats, wildlife	45 mi (72 km) northwest of the SEZ
Producing Geothermal Lease (NVN 31991)	Operating	Terrestrial habitats, wildlife	45 mi (72 km) northwest of the SEZ
Producing Geothermal Lease (NVN 31993)	Operating	Terrestrial habitats, wildlife	45 mi (72 km) northwest of the SEZ

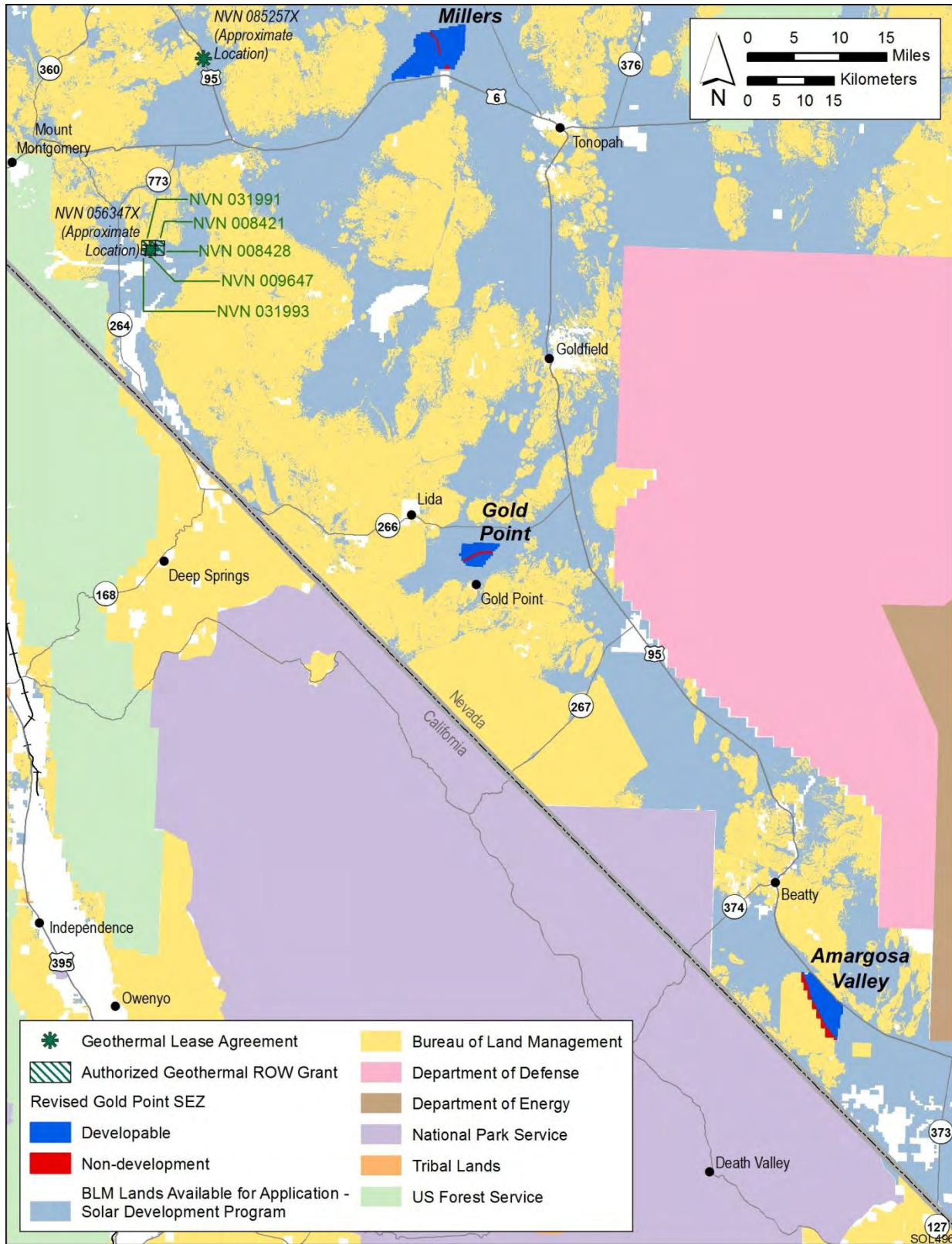
^a Projects with status changed from that given in the Draft Solar PEIS are shown in bold text.

^b See Stephens (2011) for details.

^c To convert mi to km, multiply by 1.6093.

^d See Chemetall (2010) for details.

^e See Scorpio Gold Corporation (2011) for details.



1
 2 **FIGURE 11.6.22.2-1 Locations of Existing and Reasonably Foreseeable Energy Projects on**
 3 **Public Land within a 50-mi (80-km) Radius of the Proposed Gold Point SEZ as Revised**

1 **11.6.22.4 Cumulative Impacts on Resources**
2

3 Total disturbance in the proposed Gold Point SEZ over 20 years would be about
4 3,677 acres (14.9 km²) (80% of the entire proposed SEZ). This development would contribute
5 incrementally to the impacts from other past, present, and reasonably foreseeable future actions
6 in the region as described in the Draft Solar PEIS. Primary impacts from development in the
7 Gold Point SEZ may include impacts on water quantity and quality, air quality, ecological
8 resources such as habitat and species, cultural and visual resources, and specially designated
9 lands.

10
11 No additional major actions have been identified within 50 mi (80 km) of the SEZ.
12 Therefore, the incremental cumulative impacts associated with development in the proposed
13 Gold Point SEZ during construction, operation, and decommissioning are expected to be the
14 same as those discussed in the Draft Solar PEIS.
15

16
17 **11.6.23 Transmission Analysis**
18

19 The methodology for this transmission analysis is described in Appendix G of this Final
20 Solar PEIS. This section presents the results of the transmission analysis for the Gold Point SEZ,
21 including the identification of potential load areas to be served by power generated at the SEZ
22 and the results of the DLT analysis. Unlike Sections 11.6.2 through 11.6.22, this section is not an
23 update of previous analysis for the Gold Point SEZ; this analysis was not presented in the Draft
24 Solar PEIS. However, the methodology and a test case analysis were presented in the
25 Supplement to the Draft Solar PEIS. Comments received on the material presented in the
26 Supplement were to improve the methodology for the assessment presented in this Final Solar
27 PEIS.
28

29 On the basis of its size, the assumption of a minimum of 5 acres (0.02 km²) of land
30 required per MW, and the assumption of a maximum of 80% of the land area developed, the
31 Gold Point SEZ is estimated to have the potential to generate 735 MW of marketable solar power
32 at full build-out.
33

34
35 **11.6.23.1 Identification and Characterization of Load Areas**
36

37 The primary candidates for Gold Point SEZ load areas are the major surrounding cities.
38 Figure 11.6.23.1-1 shows the possible load areas for the Gold Point SEZ and the estimated
39 portion of their market that could be served by solar generation. Possible load areas for the Gold
40 Point SEZ include Phoenix, Arizona; Salt Lake City, Utah; Las Vegas and Reno, Nevada; and
41 Los Angeles, San Jose, San Francisco, Oakland, and Sacramento, California.
42

43 The two load area groupings examined for the Gold Point SEZ are as follows:
44

- 45 1. Las Vegas, Nevada; and
 - 46 2. Reno, Nevada; and Sacramento, California.
- 47



1
2 **FIGURE 11.6.23.1-1 Location of the Proposed Gold Point SEZ and Possible**
3 **Load Areas (Source for background map: Platts 2011)**

4
5
6 Figure 11.6.23.1-2 shows the most economically viable transmission scheme for the Gold
7 Point SEZ (transmission scheme 1), and Figure 11.6.23.1-3 shows an alternative transmission
8 scheme (transmission scheme 2) that represents a logical choice should transmission scheme 1
9 be infeasible. As described in Appendix G, the alternative shown in transmission scheme 2
10 represents the optimum choice if one or more of the primary linkages in transmission scheme 1
11 are excluded from consideration. The groups provide for linking loads along alternative routes so
12 that the SEZ's output of 735 MW could be fully allocated.

13
14 Table 11.6.23.1-1 summarizes and groups the load areas according to their associated
15 transmission scheme and provides details on how the megawatt load for each area was estimated.

16
17
18 **11.6.23.2 Findings for the DLT Analysis**

19
20 The DLT analysis approach assumes that the Gold Point SEZ will require all new
21 construction for transmission lines (i.e., dedicated lines) and substations. The new transmission
22 lines(s) would directly convey the 735-MW output of the Gold Point SEZ to the prospective
23 load areas for each possible transmission scheme. The approach also assumes that all existing
24 transmission lines in the WECC region are saturated and have little or no available capacity to
25 accommodate the SEZ's output throughout the entire 10-year study horizon.

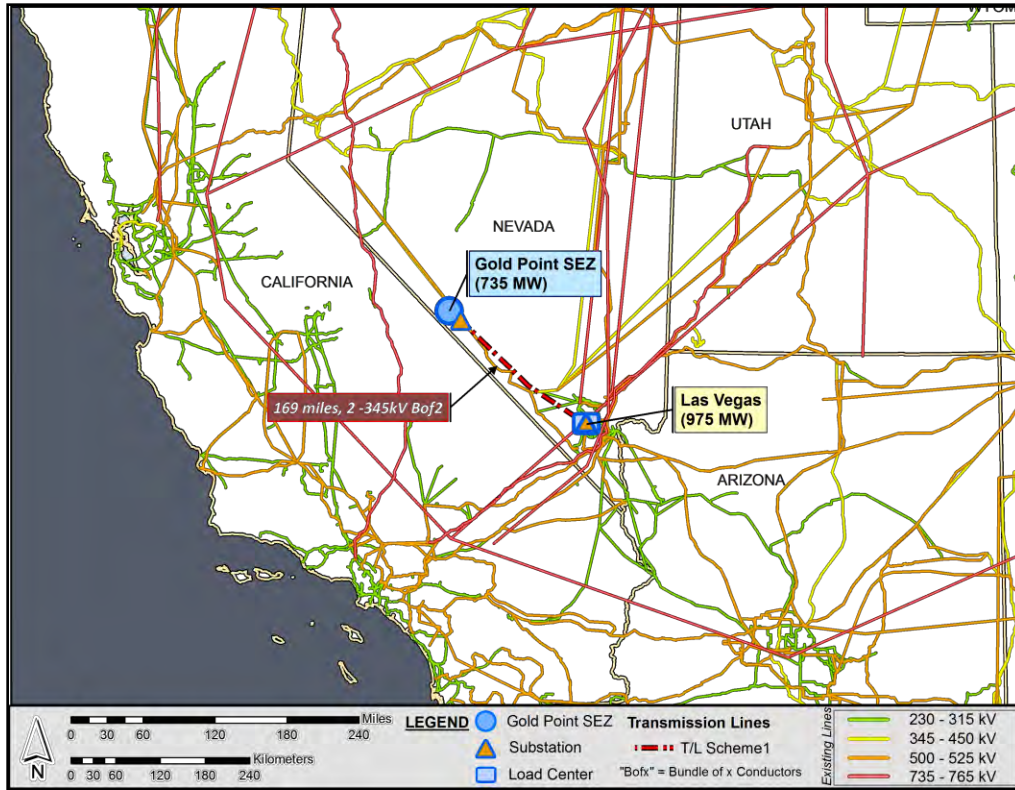
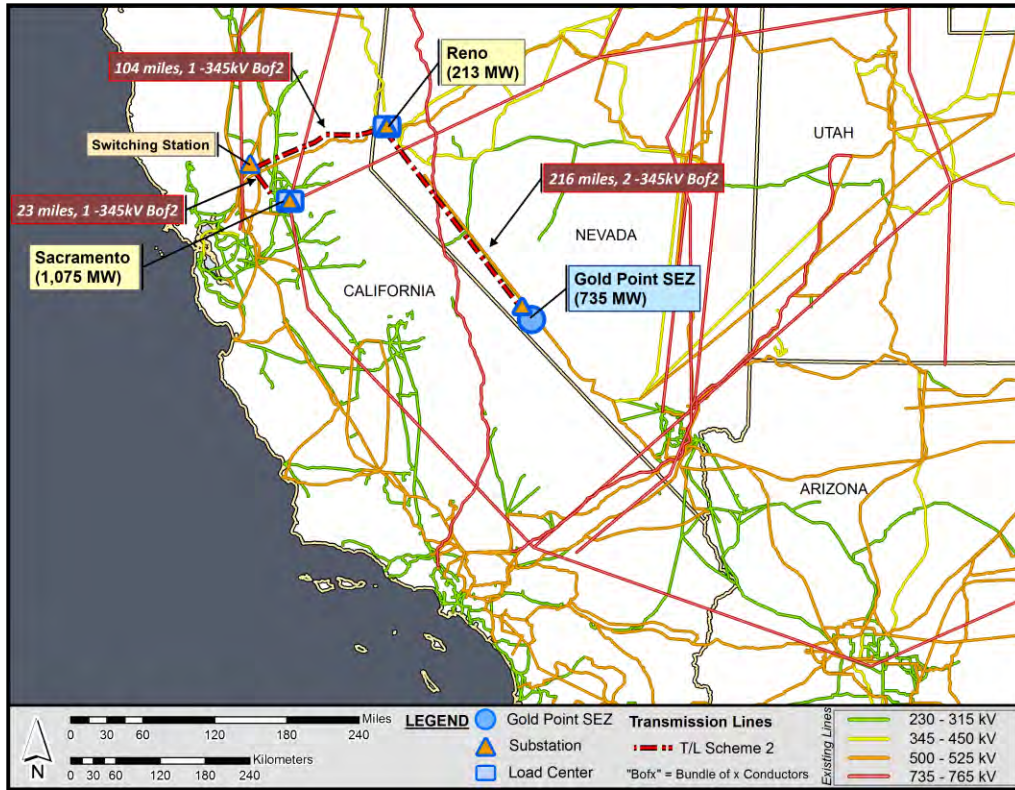


FIGURE 11.6.23.1-2 Transmission Scheme 1 for the Proposed Gold Point SEZ
(Source for background map: Platts 2011)

Figures 11.6.23.1-2 and 11.6.23.1-3 display the pathways that new dedicated lines might follow to distribute solar power generated at the Gold Point SEZ via the two identified transmission schemes described in Table 11.6.23.1-1. 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 Las Vegas (975 MW), so that the 735-MW output of the Gold Point SEZ could be fully utilized (Figure 11.6.23.1-2). This particular scheme has one segment that extends to the southeast from the SEZ to Las Vegas (975 MW) over a distance of about 169 mi (272 km). This segment would require a double-circuit 345-kV (2-345-kV) bundle of two conductors (Bof2) transmission line design based on engineering and operational considerations. 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.

For transmission scheme 2, serving load centers to the northwest, Figure 11.6.23.1-3 shows that new lines would be constructed to connect with Reno (213 MW) and Sacramento (1,075 MW), so that the 735-MW output of the Gold Point SEZ could be fully utilized. This scheme has three segments. The first segment extends to the northwest from the SEZ to Reno



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FIGURE 11.6.23.1-3 Transmission Scheme 2 for the Proposed Gold Point SEZ (Source for background map: Platts 2011)

TABLE 11.6.23.1-1 Candidate Load Area Characteristics for the Proposed Gold Point SEZ

Transmission Scheme	City/Load Area Name ^a	Position Relative to SEZ	2010 Population ^b	Estimated Total Peak Load (MW)	Estimated Peak Solar Market (MW)
1	Las Vegas, Nevada	Southeast	1,950,000	4,875	975
2	Reno, Nevada Sacramento, California	Northwest Northwest	425,000 2,150,000	1,063 5,375	213 1,075

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

^b City and metropolitan area population data are from 2010 Census data (U.S. Bureau of the Census 2010).

7
8
9

(213 MW) over a distance of about 216 mi (348 km). This segment would require a double-circuit 345-kV (2-345 kV) bundle of two (Bof2) transmission line design. The second segment runs about 104 mi (167 km) east from Reno to a switching station located just north of Sacramento area, while the third segment extends from the switching station south about 23 mi (37 km) to Sacramento (1,075 MW). The second and third segments require a single-circuit 345-kV bundle of two (Bof2) transmission line design.

Table 11.6.23.2-1 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. 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 735 MW (to match the plant’s output), while the combined load substations would have a similar total rating of 735 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, additional equipment to regulate voltage.

Table 11.6.23.2-2 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 Las Vegas. This scheme is estimated to potentially disturb about 3,603 acres (14.6 km²) of land. The less favorable transmission scheme with respect to minimizing costs and the area disturbed would be scheme 2, which serves Reno and Sacramento loads. For this

TABLE 11.6.23.2-1 Potential Transmission Schemes, Estimated Solar Markets, and Distances to Load Areas for the Proposed Gold Point SEZ

Transmission Scheme	City/Load Area Name ^a	Estimated Peak Solar Market (MW) ^b	Total Solar Market (MW)	Sequential Distance (mi) ^c	Total Distance (mi) ^c	Line Voltage (kV)	No. of Substations
1	Las Vegas, Nevada	975	975	169	169	345	2
2	Reno, Nevada Sacramento, California	213 1,075	1,288	216 127	343	345	4

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

^b From Table 11.6.23.1-1.

^c To convert mi to km, multiply by 1.6093.

1 **TABLE 11.6.23.2-2 Comparison of the Various Transmission Line Configurations with**
 2 **Respect to Land Use Requirements for the Proposed Gold Point SEZ**

Transmission Scheme	City/Load Area Name ^a	Total Distance (mi) ^b	No. of Substations	Land Use (acres) ^c		
				Transmission Line	Substation	Total
1	Las Vegas, Nevada	169	2	3,584.8	17.7	3,602.5
2	Reno, Nevada Sacramento, California	343	4	7,275.8	17.7	7,293.5

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

b To convert mi to km, multiply by 1.6093.

c To convert acres to km², multiply by 0.004047.

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scheme, the construction of new transmission lines and substations is estimated to disturb a land area on the order of 7,294 acres (29.5 km²).

8 Table 11.6.23.2-3 shows the estimated NPV of both transmission schemes and takes into
 9 account the cost of constructing the lines, the substations, and the projected revenue stream over
 10 the 10-year horizon. A positive NPV indicates that revenues more than offset investments. This
 11 calculation does not include the cost of producing electricity.

12
 13 The most economically attractive configuration (transmission scheme 1) has the highest
 14 positive NPV and serves Las Vegas. The secondary case (transmission scheme 2), which
 15 excludes one or more of the primary pathways used in scheme 1, is less economically attractive
 16 and serves the Reno and Sacramento markets. For the assumed utilization factor of 20%, both
 17

18
 19 **TABLE 11.6.23.2-3 Comparison of Potential Transmission Lines with Respect to NPV (Base Case)**
 20 **for the Proposed Gold Point SEZ**

Transmission Scheme	City/Load Area Name ^a	Present Value Transmission Line Cost (\$ million)	Present Value Substation Cost (\$ million)	Annual Sales Revenue (\$ million)	Present Worth of Revenue Stream (\$ million)	NPV (\$ million)
1	Las Vegas, Nevada	422.5	48.5	128.8	994.3	523.3
2	Reno, Nevada Sacramento, California	819.4	48.5	128.8	994.3	126.4

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

options exhibit positive NPVs, implying varying degrees of economic viability under the current assumptions.

Table 11.6.23.2-4 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 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 Gold Point SEZ are as follows:

- Transmission scheme 1, which identifies Las Vegas 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 3,603 acres (14.6 km²).
- Transmission scheme 2, which represents an alternative configuration if Las Vegas is excluded, serves Reno and Sacramento. This configuration would result in new land disturbance of about 7,294 acres (29.5 km²).
- 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 Gold Point 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 Gold Point SEZ indicates no reduction of impacts from increasing the solar-eligible load assumption for transmission scheme 1, which brings power to Las Vegas. Increasing the solar-eligible percentage would have no effect, because an adequate load area was identified under the 20% assumption that would

TABLE 11.6.23.2-4 Effect of Varying the Utilization Factor on the NPV of the Transmission Schemes for the Proposed Gold Point SEZ

Transmission Scheme	City/Load Area Name ^a	NPV (\$ million) at Different Utilization Factors					
		20%	30%	40%	50%	60%	70%
1	Las Vegas, Nevada	523	1,021	1,518	2,015	2,512	3,009
2	Reno, Nevada Sacramento, California	126	624	1,121	1,618	2,115	2,612

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

1 accommodate all of the SEZ's capacity. Thus, line distances and voltages
2 would not be affected by increasing the solar-eligible load assumption, and
3 similarly the associated costs and land disturbance would not be affected.
4 However, for transmission scheme 2, which serves Reno and Sacramento,
5 increasing the solar-eligible load assumption could result in lower cost and
6 land disturbance estimates, because it is possible that fewer load areas would
7 be needed to accommodate the SEZ's capacity.
8
9

10 **11.6.24 Impacts of the Withdrawal**

11
12 The BLM is proposing to withdraw 4,810 acres (19 km²) of public land comprising the
13 proposed Gold Point SEZ from settlement, sale, location, or entry under the general land laws,
14 including the mining laws, for a period of 20 years (see Section 2.2.2.2.4 of the Final Solar
15 PEIS). The public lands would be withdrawn, subject to valid existing rights, from settlement,
16 sale, location, or entry under the general land laws, including the mining laws. This means that
17 the lands could not be appropriated, sold, or exchanged during the term of the withdrawal, and
18 new mining claims could not be filed on the withdrawn lands. Mining claims filed prior to the
19 segregation or withdrawal of the identified lands would take precedence over future solar energy
20 development. The withdrawn lands would remain open to the mineral leasing, geothermal
21 leasing, and mineral material laws, and the BLM could elect to lease the oil, gas, coal, or
22 geothermal steam resources, or to sell common-variety mineral materials, such as sand and
23 gravel, contained in the withdrawn lands. In addition, the BLM would retain the discretion to
24 authorize linear and renewable energy ROWs on the withdrawn lands.
25

26 The purpose of the proposed land withdrawal is to minimize the potential for conflicts
27 between mineral development and solar energy development for the proposed 20-year
28 withdrawal period. Under the land withdrawal, there would be no mining-related surface
29 development, such as the establishment of open pit mining, construction of roads for hauling
30 materials, extraction of ores from tunnels or adits, or construction of facilities to process the
31 material mined, that could preclude use of the SEZ for solar energy development. For the Gold
32 Point SEZ, impacts of the proposed withdrawal on mineral resources and related economic
33 activity and employment are expected to be negligible to minor (BLM 2012). Although the
34 western half of the SEZ historically contained lode and placer claims, those claims are all closed,
35 and there is no evidence of previous production from the site. And because the lands are
36 currently segregated, no additional mining claims can be filed.
37

38 Although the mineral potential of the lands within the Gold Point SEZ is low, the
39 proposed withdrawal of lands within the SEZ would preclude many types of mining activity over
40 a 20-year period, resulting in the avoidance of potential mining related adverse impacts. Impacts
41 commonly related to mining development include increased soil erosion and sedimentation,
42 water use, generation of contaminated water in need of treatment, creation of lagoons and ponds
43 (hazardous to wildlife), toxic runoff, air pollution, establishment of noxious weeds and invasive
44 species, habitat destruction or fragmentation, disturbance of wildlife, blockage of migration
45 corridors, increased visual contrast, noise, destruction of cultural artifacts and fossils and/or their

1 context, disruption of landscapes and sacred places of interest to tribes, increased traffic and
2 related emissions, and conflicts with other land uses (e.g., recreational).

5 **11.6.25 References**

7 *Note to Reader:* This list of references identifies Web pages and associated URLs where
8 reference data were obtained for the analyses presented in this Final Solar PEIS. It is likely that
9 at the time of publication of this Final Solar PEIS, some of these Web pages may no longer be
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1 **11.6.26 Errata for the Proposed Gold Point SEZ**
2

3 This section presents corrections to material presented in the Draft Solar PEIS and the
4 Supplement to the Draft. The need for these corrections was identified in several ways: through
5 comments received on the Draft Solar PEIS and the Supplement to the Draft (and verified by
6 the authors), through new information obtained by the authors subsequent to publication of the
7 Draft Solar PEIS and the Supplement to the Draft, or through additional review of the original
8 material by the authors. Table 11.6.26-1 provides corrections to information presented in the
9 Draft Solar PEIS and the Supplement to the Draft.
10

TABLE 11.6.26-1 Errata for the Proposed Gold Point SEZ (Section 11.6 of the Draft Solar PEIS and Section C.4.4 of the Supplement to the Draft Solar PEIS)

Section No.	Page No.	Line No.	Table or Figure No.	Correction
11.6.1.3	11.6-5	NA	Table 11.6.1.3-1	Text under Specially Designated Areas stated “light from solar facilities could adversely affect night sky viewing in some specially designated areas.” Further analysis and consideration of required programmatic design features (see Section A.2.2.13.1, Night Sky Protection) indicates that adverse impacts on night sky viewing would not be anticipated.
11.6.3.2.1	11.6-24	36-41		Text stated that light from solar development in the SEZ could adversely affect night sky viewing from Death Valley National Park and adjoining specially designated areas. Further review and consideration of required programmatic design features (see Section A.2.2.13.1, Night Sky Protection) indicates that adverse impacts on night sky viewing would not be anticipated.
11.6.11.2				All uses of the term “neotropical migrants” in the text and tables of this section should be replaced with the term “passerines.”

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1 **11.7 MILLERS**

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4 **11.7.1 Background and Summary of Impacts**

5
6
7 **11.7.1.1 General Information**

8
9 The proposed Millers SEZ is located in Esmeralda County in southern Nevada, 44 mi
10 (71 km) east of the California border. In 2008, the county population was 664, while adjacent
11 Nye County to the west had a population of 44,175. The nearest town is Tonopah, Nevada, about
12 15 mi (24 km) west in Nye County, with a population of approximately 1,500. The NTTR is
13 30 mi (48 km) northeast of the SEZ. As of October 28, 2011, there were no pending solar
14 applications within or adjacent to the SEZ.
15

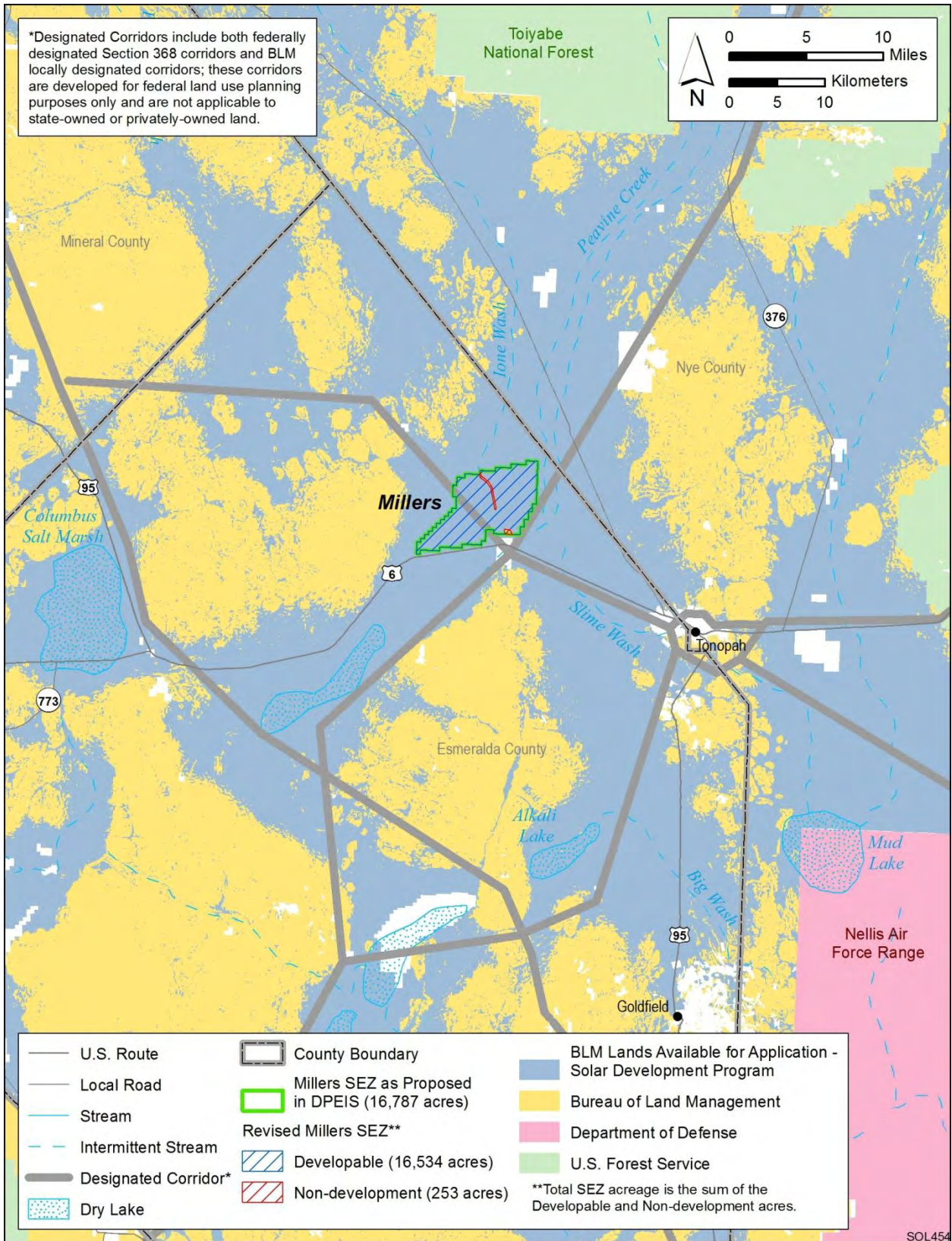
16 The nearest major road access to the proposed SEZ is via U.S. 95/U.S. 6, which runs
17 east–west along its southern border. The nearest railroad stop is 90 mi (145 km) away in Thorne,
18 which is the end of a spur from the main line of the UP Railroad. Tonopah Airport, a small
19 county airport 23 mi (37 km) to the east of the SEZ, and three public airports managed by the
20 BLM serve the area, although none has scheduled commercial passenger service or regular
21 freight service.
22

23 As published in the Draft Solar PEIS (BLM and DOE 2010), the proposed Millers SEZ
24 had a total area of 16,787 acres (66.9 km²). In the Supplement to the Draft Solar PEIS (BLM and
25 DOE 2011), no boundary revisions were identified for the proposed SEZ (see Figure 11.7.1.1-1).
26 However, areas specified for non-development were mapped, where data were available. For the
27 proposed Millers SEZ, Ione Wash and a small wetland area in the southern portion of the SEZ,
28 totaling 253 acres (1.0 km²), were identified as non-development areas (see Figure 11.7.1.1-2).
29 The remaining developable area within the SEZ is 16,534 acres (66.9 km²).
30

31 The analyses in the following sections update the affected environment and potential
32 environmental, cultural, and socioeconomic impacts associated with utility-scale solar energy
33 development in the Millers SEZ as described in the Draft Solar PEIS.
34
35

36 **11.7.1.2 Development Assumptions for the Impact Analysis**

37
38 Maximum solar development of the Millers SEZ is assumed to be 80% of the SEZ
39 area over a period of 20 years, a maximum of 13,227 acres (54 km²) (Table 11.7.1.2-1).
40 Full development of the Millers SEZ would allow development of facilities with an estimated
41 total of between 1,470 MW (power tower, dish engine, or PV technologies, 9 acres/MW
42 [0.04 km²/MW]) and 2,645 MW (solar trough technologies, 5 acres/MW [0.02 km²/MW]) of
43 electrical power capacity.
44
45



1

2 **FIGURE 11.7.1.1-1 Proposed Millers SEZ as Revised**

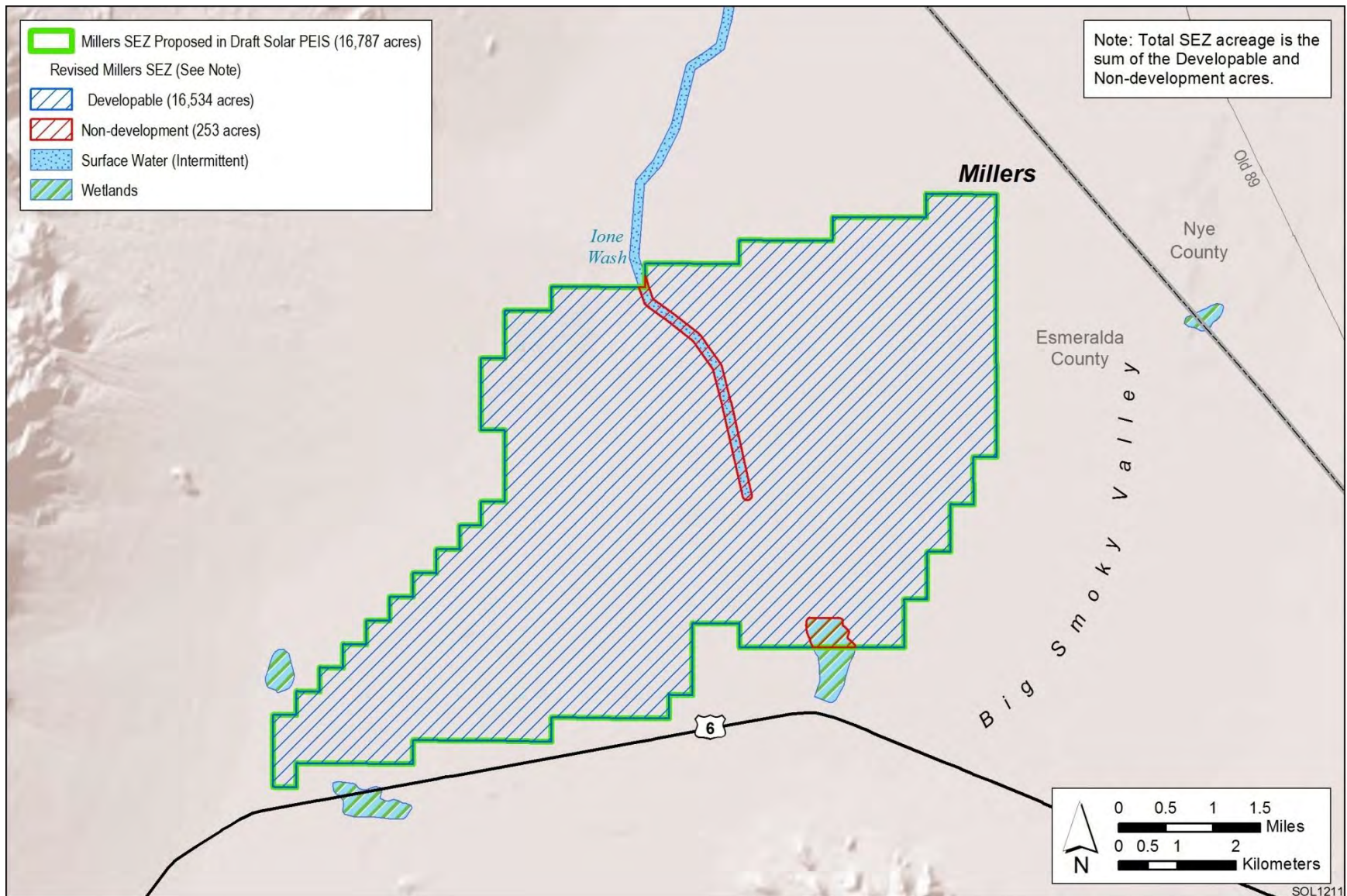


FIGURE 11.7.1.1-2 Developable and Non-development Areas for the Proposed Millers SEZ as Revised

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

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

- a To convert acres to km², 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 km²/MW) of land required.
- c Maximum power output if the SEZ were fully developed using solar trough technologies, assuming 5 acres/MW (0.02 km²/MW) of land required.
- d To convert mi to km, multiply by 1.6093.
- e NA = no access road construction is assumed necessary for the SEZ.
- f BLM-designated corridors are developed for federal land use planning purposes only and are not applicable to state-owned or privately owned land.

3
 4
 5 Availability of transmission from SEZs to load centers will be an important consideration
 6 for future development in SEZs. For the proposed Millers SEZ, the nearest existing transmission
 7 line as identified in the Draft Solar PEIS is a 120-kV line that runs through the SEZ. It is possible
 8 that this existing line could be used to provide access from the SEZ to the transmission grid, but
 9 the 120-kV capacity of the line would not be adequate for the possible 1,470 to 2,645 MW of
 10 new capacity. Therefore, at full build-out capacity, new transmission and/or upgrades of existing
 11 transmission lines would be required to bring electricity from the proposed Millers SEZ to load
 12 centers. An assessment of the most likely load center destinations for power generated at the
 13 Millers SEZ and a general assessment of the impacts of constructing and operating new
 14 transmission facilities to those load centers are provided in Section 11.7.23. In addition, the
 15 generic impacts of transmission and associated infrastructure construction and of line upgrades
 16 for various resources are discussed in Chapter 5 of this Final Solar PEIS. Project-specific
 17 analyses would be required to identify the specific impacts of new transmission construction and
 18 line upgrades for any projects proposed within the SEZ.

19
 20 For the proposed Millers SEZ, U.S. 95/U.S. 6 runs from east to west along the southern
 21 border of the SEZ. Existing road access to the proposed Millers SEZ should be adequate to
 22 support construction and operation of solar facilities. No additional road construction outside of
 23 the SEZ was assumed to be required to support solar development.

24
 25 The Millers SEZ partially overlaps a locally designated transmission corridor. For this
 26 impact assessment, it is assumed that up to 80% of the proposed SEZ could be developed. This

1 does not take into account the potential limitations to solar development that may result from siting
2 constraints associated with the corridor. The development of solar facilities and the existing corridor
3 will be dealt with by the BLM on a case-by-case basis; see Section 11.7.2.2 on impacts on lands and
4 realty for further discussion.
5
6

7 **11.7.1.3 Programmatic and SEZ-Specific Design Features**

8

9 The proposed programmatic design features for each resource area to be required under
10 the BLM Solar Energy Program are presented in Section A.2.2 of Appendix A of this Final Solar
11 PEIS. These programmatic design features are intended to avoid, minimize, and/or mitigate
12 adverse impacts from solar energy development and will be required for development on all
13 BLM-administered lands including SEZ and non-SEZ lands.
14

15 The discussions below addressing potential impacts of solar energy development on
16 specific resource areas (Sections 11.7.2 through 11.7.22) also provide an assessment of the
17 effectiveness of the programmatic design features in mitigating adverse impacts from solar
18 development within the SEZ. SEZ-specific design features to address impacts specific to the
19 proposed Millers SEZ may be required in addition to the programmatic design features. The
20 proposed SEZ-specific design features for the Millers SEZ have been updated on the basis of
21 revisions to the SEZ since the Draft Solar PEIS (such as the identification of non-development
22 areas) and on the basis of comments received on the Draft Solar PEIS and Supplement to the
23 Draft. All applicable SEZ-specific design features identified to date (including those from the
24 Draft Solar PEIS that are still applicable) are presented in Sections 11.7.2 through 11.7.22.
25
26

27 **11.7.2 Lands and Realty**

28
29

30 **11.7.2.1 Affected Environment**

31

32 The exterior boundary of the proposed SEZ remains the same as that in the Draft Solar
33 PEIS. Within the boundary of the proposed Millers SEZ, about 253 acres (1.0 km²) along Ione
34 Wash and a small wetland area have been designated as non-development areas, leaving a total
35 developable area within the SEZ of 16,534 acres (66.9 km²). Since the Draft Solar PEIS was
36 published, the BLM has authorized a solar energy development ROW for a facility utilizing
37 power tower technology about 3.2 mi (5 km) east of the proposed SEZ.
38
39

40 **11.7.2.2 Impacts**

41

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

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

3
4 The proposed Millers SEZ partially overlaps a locally designated transmission corridor.
5 This existing corridor will be used primarily for the siting of transmission lines and other
6 infrastructure such as pipelines. The existing corridor will be the preferred location for any
7 transmission development that is required to support solar development and future transmission
8 grid improvements related to the build-out of the Millers SEZ. Any use of the corridor lands
9 within the Millers SEZ for solar energy facilities, such as solar panels or heliostats, must be
10 compatible with the future use of the existing corridor. The BLM will assess solar projects in the
11 vicinity of the existing corridor on a case-by-case basis. The BLM will review and approve
12 individual project plans of development to ensure compatible development that maintains the use
13 of the corridor.

14 15 16 **11.7.2.3 SEZ-Specific Design Features and Design Feature Effectiveness**

17
18 Required programmatic design features that would reduce impacts on lands and realty
19 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
20 programmatic design features will provide some mitigation for the identified impacts but will not
21 mitigate all adverse impacts. For example, impacts related to the exclusion of many existing and
22 potential uses of the public land, the visual impact of an industrial-type solar facility within an
23 otherwise rural area, and induced land use changes, if any, on nearby or adjacent state and
24 private lands may not be fully mitigated

25
26 No SEZ-specific design features to address impacts on lands and realty in the proposed
27 Millers SEZ have been identified through this Final Solar PEIS. Some SEZ-specific design
28 features may be established for parcels within the Millers SEZ through the process of preparing
29 parcels for competitive offer and subsequent project-specific analysis..

30 31 32 **11.7.3 Specially Designated Areas and Lands with Wilderness Characteristics**

33 34 35 **11.7.3.1 Affected Environment**

36
37 There are no specially designated areas or lands with wilderness characteristics within
38 25 mi (40 km) of the SEZ. The description in the Draft Solar PEIS is still valid.

39 40 41 **11.7.3.2 Impacts**

42
43 Because there are no affected resources within 25 mi (40 km) of the SEZ, no impacts
44 have been identified.

1 **11.7.3.3 SEZ-Specific Design Features and Design Feature Effectiveness**

2
3 Since there are no specially designated areas or lands with wilderness characteristics
4 within 25 mi (40 km) of the SEZ, no SEZ-specific design features to address impacts on such
5 areas are required for the proposed Millers SEZ.
6
7

8 **11.7.4 Rangeland Resources**

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10
11 **11.7.4.1 Livestock Grazing**

12
13
14 ***11.7.4.1.1 Affected Environment***

15
16 The proposed SEZ contains a small percentage of one livestock grazing allotment, and
17 the description in the Draft Solar PEIS remains valid.
18
19

20 ***11.7.4.1.2 Impacts***

21
22 Grazing would be excluded from areas of the SEZ developed for solar energy production.
23 The SEZ includes about 4% of the Magruder grazing allotment. If all of the SEZ were
24 developed, it is anticipated that there would be only a minimal impact on the overall grazing
25 operation. It is likely that because of the large size of the allotment, any losses associated with
26 development of the SEZ would be absorbed elsewhere within the allotment.
27
28

29 ***11.7.4.1.3 SEZ-Specific Design Features and Design Feature Effectiveness***

30
31 Required programmatic design features that would reduce impacts on livestock grazing
32 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
33 programmatic design features will provide some mitigation for any identified impacts.
34

35 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
36 comments received as applicable, no SEZ-specific design features to address impacts on
37 livestock grazing have been identified. Some SEZ-specific design features may be identified
38 through the process of preparing parcels for competitive offer and subsequent project-specific
39 analysis.
40
41

42 **11.7.4.2 Wild Horses and Burros**

43
44
45 ***11.7.4.2.1 Affected Environment***

46
47 As presented in Section 11.7.4.2.1 of the Draft Solar PEIS, no wild horse or burro HMAs
48 occur within the proposed Millers SEZ or in close proximity to it.

1 **11.7.4.2.2 Impacts**

2
3 As presented in the Draft Solar PEIS, solar energy development within the proposed
4 Millers SEZ would not directly affect wild horses and burros.

5
6
7 **11.7.4.2.3 SEZ-Specific Design Features and Design Feature Effectiveness**

8
9 Because solar energy development within the proposed Millers SEZ would not affect
10 wild horses and burros, no SEZ-specific design features to address wild horses and burros have
11 been identified in this Final Solar PEIS.

12
13
14 **11.7.5 Recreation**

15
16
17 **11.7.5.1 Affected Environment**

18
19 The description of the area within and around the proposed Millers SEZ in the Draft
20 Solar PEIS remains valid. The overall appearance of the site is uniform and somewhat
21 monotonous, and it is believed that the area receives no significant recreational use.

22
23
24 **11.7.5.2 Impacts**

25
26 Recreational use would be eliminated from portions of the SEZ developed for solar
27 energy production. The level of recreational use in the area is thought to be low, and the impact
28 on recreational use is anticipated to be minimal. The exception to this would be the presence
29 within the SEZ of a portion of the route for the Las Vegas to Reno OHV race; this portion would
30 be closed. It is anticipated that the race course would be rerouted around the SEZ to avoid the
31 economic and recreational loss that would occur if this was not done.

32
33 In addition, lands that are outside of the proposed SEZ may be acquired or managed for
34 mitigation of impacts on other resources (e.g., sensitive species). Managing these lands for
35 mitigation could further exclude or restrict recreational use, potentially leading to additional
36 losses in recreational opportunities in the region. The impact of acquisition and management of
37 mitigation lands would be considered as a part of the environmental analysis of specific solar
38 energy projects.

39
40
41 **11.7.5.3 SEZ-Specific Design Features and Design Feature Effectiveness**

42
43 Required programmatic design features that would reduce impacts on recreational
44 resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing
45 the programmatic design features will provide adequate mitigation for most of the identified
46 impacts with the exception of the potential impact on desert racing.

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

- 4
- 5 • Alternative routes for the Las Vegas–Reno race should be considered
6 consistent with local land use plan requirements.
- 7

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

10 11 12 **11.7.6 Military and Civilian Aviation**

13 14 15 **11.7.6.1 Affected Environment**

16
17 The description in the Draft Solar PEIS remains valid. Approximately the eastern two-
18 thirds of the proposed Millers SEZ is covered by MTRs, with 50- and 100-ft (15- and 30-m)
19 AGL operating limits. The area is located about 26 mi (42 km) northwest of the boundary of the
20 NTTR. The closest civilian aviation facility is the Tonopah Municipal Airport, which is located
21 about 20 mi (32 km) southeast of the SEZ.

22 23 24 **11.7.6.2 Impacts**

25
26 Impacts described in the Draft Solar PEIS remain valid and have been updated with
27 additional input from the DoD. Impacts include the following:

- 28
- 29 • Solar development could encroach into MTR airspace that crosses the SEZ;
30 structures higher than 50 ft (15 m) AGL may present unacceptable
31 electromagnetic compatibility concerns for the NTTR test mission.
- 32
- 33 • Light from solar facilities could affect DoD nighttime operations.
- 34

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

40 41 42 **11.7.6.3 SEZ-Specific Design Features and Design Feature Effectiveness**

43
44 Required programmatic design features that would reduce impacts on military and
45 civilian aviation are described in Section A.2.2 of Appendix A of this Final Solar PEIS. The

1 programmatic design features require early coordination with the DoD to identify and avoid,
2 minimize, and/or mitigate, if possible, potential impacts on the use of military airspace.
3

4 No SEZ-specific design features to address impacts on military and civilian aviation for
5 the Millers SEZ have been identified in this Final Solar PEIS. Some SEZ-specific design features
6 may be identified through the process of preparing parcels for competitive offer and subsequent
7 project-specific analysis.
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10 **11.7.7 Geologic Setting and Soil Resources**

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13 **11.7.7.1 Affected Environment**

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16 ***11.7.7.1.1 Geologic Setting***

17

18 Data provided in the Draft Solar PEIS remain valid. The boundaries of the proposed SEZ
19 remain the same, but about 253 acres (1.0 km²) of non-development areas have now been
20 identified. Non-development areas include Ione Wash and a small wetland area in the southern
21 portion of the SEZ.
22
23

24 ***11.7.7.1.2 Soil Resources***

25

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

- 27 • Soil unit coverage at the proposed Millers SEZ as revised is summarized in
28 Table 11.7.7.1-1, which provides revised areas for soil map units taking into
29 account non-development areas.
30
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33 **11.7.7.2 Impacts**

34

35 Impacts on soil resources would occur mainly as a result of ground-disturbing activities
36 (e.g., grading, excavating, and drilling), especially during the construction phase of a solar
37 project. Because the developable area of the SEZ has changed by less than 5%, the assessment
38 of impacts provided in the Draft Solar PEIS remains valid, with the following updates:
39

- 40 • Impacts related to wind erodibility are somewhat reduced because the
41 identification of non-development areas eliminates 224 acres (0.91 km²) of
42 moderately erodible soils and 28 acres (0.11 km²) of highly erodible soils
43 (Yomba-Wardenot-Izo and Yomba-Kawich associations) from development.
44

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

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

TABLE 11.7.7.1-1 (Cont.)

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

TABLE 11.7.7.1-1 (Cont.)

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

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

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

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

^d To convert from acres to km², multiply by 0.004047.

Footnotes continued on next page.

TABLE 11.7.7.1-1 (Cont.)

-
- ^e WEGs are based on soil texture, content of organic matter, effervescence of carbonates, content of rock fragments, and mineralogy, and also take into account soil moisture, surface cover, soil surface roughness, wind velocity and direction, and the length of unsheltered distance (USDA 2004). Groups range in value from 1 (most susceptible to wind erosion) to 8 (least susceptible to wind erosion). The NRCS provides a wind erodibility index, expressed as an erosion rate in tons per acre per year, for each of the wind erodibility groups: WEG 1, 220 tons (200 metric tons) per acre (4,000 m²) per year (average); WEG 2, 134 tons (122 metric tons) per acre (4,000 m²) per year; WEGs 3 and 4 (and 4L), 86 tons (78 metric tons) per acre (4,000 m²) per year; WEG 5, 56 tons (51 metric tons) per acre (4,000 m²) per year; WEG 6, 48 tons (44 metric tons) per acre (4,000 m²) per year; WEG 7, 38 tons (34 metric tons) per acre (4,000 m²) per year; and WEG 8, 0 tons (0 metric tons) per acre (4,000 m²) per year.
- ^f A total of 24 acres (0.097 km²) within the Yomba–Playas–Youngston association, alkali is currently categorized as a non-development area.
- ^g A total of 142 acres (0.57 km²) within the Yomba–Playas–Youngston association is currently categorized as a non-development area.
- ^h A total of 2 acres (0.0081 km²) within the Yomba–Wardenot–Izo association is currently categorized as a non-development area.
- ⁱ A total of 26 acres (0.11 km²) within the Yomba–Kawich association is currently categorized as a non-development area.
- ^j A total of 58 acres (0.23 km²) within the Slaw–Playas association is currently categorized as a non-development area.

Source: NRCS (2010).

- Impacts related to water erodibility are somewhat reduced because the identification of non-development areas eliminates 58 acres (0.23 km²) of moderately erodible soils from development.

11.7.7.3 SEZ-Specific Design Features and Design Feature Effectiveness

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

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

11.7.8 Minerals (Fluids, Solids, and Geothermal Resources)

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

11.7.8.1 Affected Environment

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

11.7.8.2 Impacts

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

1 **11.7.8.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on mineral resources
4 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
5 programmatic design features will provide adequate protection of mineral resources.
6

7 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
8 comments received as applicable, no SEZ-specific design features for mineral resources have
9 been identified in this Final Solar PEIS. Some SEZ-specific design features may be identified
10 through the process of preparing parcels for competitive offer and subsequent project-specific
11 analysis.
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14 **11.7.9 Water Resources**

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17 **11.7.9.1 Affected Environment**
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19 The description of the affected environment given in the Draft Solar PEIS relevant to
20 water resources at the proposed Millers SEZ remains valid and is summarized in the following
21 paragraphs.
22

23 The Millers SEZ is within the Central Nevada Desert subbasin of the Great Basin
24 hydrologic region. The SEZ is located in the southern half of the Big Smokey Valley known as
25 “Tonopah Flat.” The average precipitation is 5 in./yr (13 cm/yr); average snowfall is 13 in./yr
26 (33 cm/yr); and evapotranspiration rates have been estimated to be approximately 58 in./yr
27 (147 cm/yr). There are no perennial surface water features in the proposed Millers SEZ.
28 Intermittent stream channels of Peavine Creek and Ione Wash flow in a southwestern direction
29 across the SEZ toward the dry lake areas in the southwestern portion of Big Smokey Valley.
30 Approximately 2,200 acres (9 km²) of the northwestern portion of the SEZ is located in the base
31 of an alluvial fan containing several distributary intermittent/ephemeral stream channels.
32 Wetlands near the proposed SEZ are generally less than 200 acres (0.8 km²), and there are no
33 significant wetlands within the area. Flood hazards have not been identified for the SEZ area but
34 have been mapped for the adjacent Nye County, indicating that the braided intermittent channels
35 of Peavine Creek and Ione Wash would likely be within a 100-year floodplain. A total of
36 253 acres (1 km²) associated with the Ione Wash channel in the SEZ has been identified as a
37 non-development area. The proposed Millers SEZ is located within the Big Smokey Valley–
38 Tonopah Flat groundwater basin, which covers an area of 1,025,900 acres (4,152 km²), with
39 groundwater primarily in the basin-fill aquifer, which consists of lenses of gravels, sands, and
40 clays that are typically 1,500 to 2,500 ft (457 to 762 m) thick near the SEZ. Groundwater
41 recharge in the basin has been estimated to range from 2,807 to 4,060 ac-ft/yr (3.5 million to
42 5.0 million m³/yr), and groundwater generally flows from northeast to southwest. Depth to
43 groundwater ranges from 8 to 78 ft (2 to 24 m) in the vicinity of the SEZ, and the quality of the
44 groundwater generally meets drinking water standards.
45

1 All waters in Nevada are public property, and the NDWR is the agency responsible for
 2 managing both surface and groundwater resources. Approximately 1,300 acres (5.3 km²) of the
 3 proposed SEZ falls under State Engineer's Order 828 (NDWR 1983), which designates
 4 municipal and domestic water uses as the preferred beneficial use in the Tonapah Flat
 5 groundwater basin. The annual yield of the Tonapah Flat groundwater basin is set at
 6 6,000 ac-ft/yr (7.4 million m³/yr); water rights in the basin are over-appropriated, with a total
 7 23,930 ac-ft/yr (29.5 million m³/yr) allotted for primarily mining and irrigation (NDWR 2012).
 8 Solar energy developers would have to submit applications for new groundwater withdrawals or
 9 transfer of existing water rights under the review of the NDWR.

10
 11 In addition to the water resources information provided in the Draft Solar PEIS, this
 12 section provides a planning-level inventory of available climate, surface water, and groundwater
 13 monitoring stations within the immediate vicinity of the Millers SEZ and surrounding basin.
 14 Additional data regarding climate, surface water, and groundwater conditions are presented in
 15 Tables 11.7.9.1-1 through 11.7.9.1-7 and in Figures 11.7.9.1-1 and 11.7.9.1-2. Fieldwork and
 16 hydrologic analyses needed to determine 100-year floodplains and jurisdictional water bodies
 17 would need to be coordinated with appropriate federal, state, and local agencies. Areas within
 18 the Millers SEZ that are found to be within a 100-year floodplain will be identified as
 19 non-development areas. Any water features within the Millers SEZ determined to be
 20 jurisdictional will be subject to the permitting process described in the CWA.

21 22 23 **11.7.9.2 Impacts**

24 25 26 **11.7.9.2.1 Land Disturbance Impacts on Water Resources**

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 28 The discussion of land disturbance effects on water resources in the Draft Solar PEIS
 29 remains valid. As stated in the Draft Solar PEIS, land disturbance impacts in the vicinity of the
 30

31
 32 **TABLE 11.7.9.1-1 Watershed and Water Management Basin**
 33 **Information Relevant to the Proposed Millers SEZ as Revised**

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

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

^b To convert acres to km², multiply by 0.004047.

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

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

a National Weather Service’s Cooperative Station Network station identification code.

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

c To convert ft to m, multiply by 0.3048.

d To convert mi to km, multiply by 1.6093.

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

Source: NOAA (2012).

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

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

a To convert ft to m, multiply by 0.3048.

Source: USGS (2012b).

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

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

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

^a To convert ft³ to m³, multiply by 0.0283.

^b To convert mi to km, multiply by 1.6093.

Source: USGS (2012b).

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

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

^a NA = no data collected for this parameter.

Source: USGS (2012b).

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

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

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

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

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

^c NA = no data collected for this parameter.

Source: USGS (2012b).

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

11.7.9.2.2 Water Use Requirements for Solar Energy Technologies

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

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

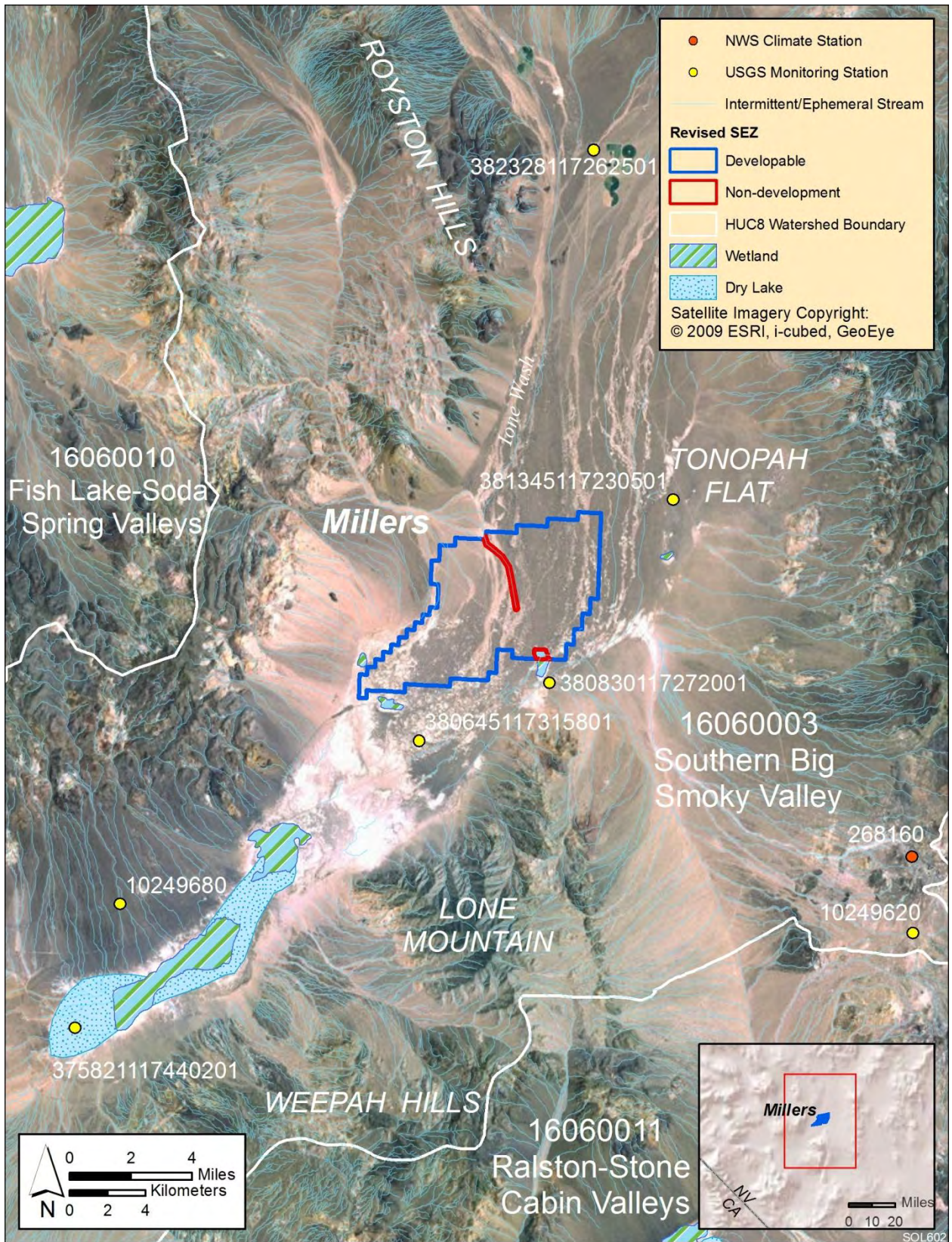
Parameter	Monitoring Station (USGS ID)				
	375821117440201	381906117232001	380645117315801	380830117272001	381345117230501
Period of record	1969	1966–1984	1969	1952–1975	1981
No. of observations	1	3	1	12	1
Surface elevation (ft) ^a	4,742	5,301	4,773	4,790	4,881
Well depth (ft)	97	100	NA ^c	61	150
Depth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

^a To convert ft to m, multiply by 0.3048.

^b To convert mi to km, multiply by 1.6093.

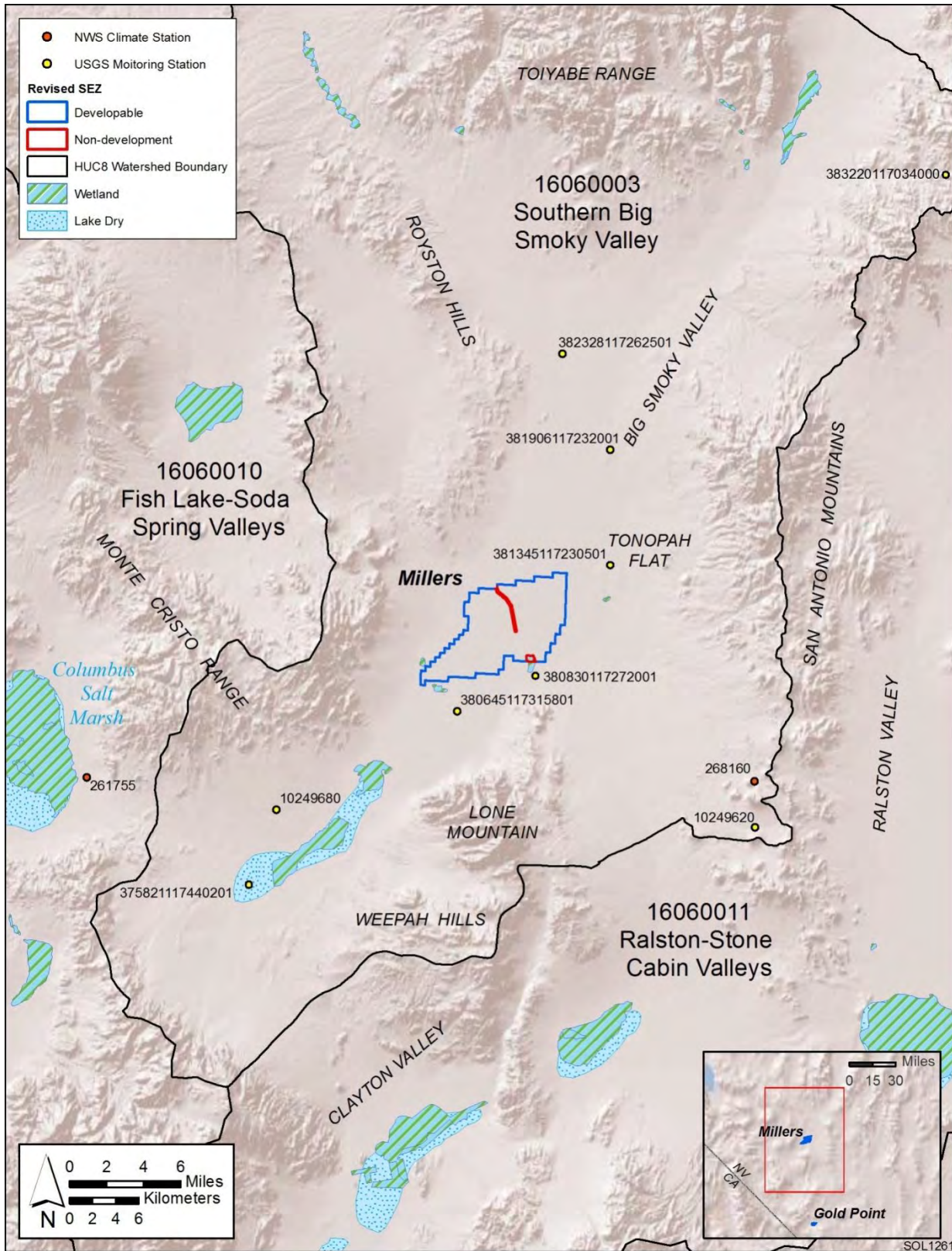
^c NA = no data collected for this parameter.

Source: USGS (2012b).



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



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

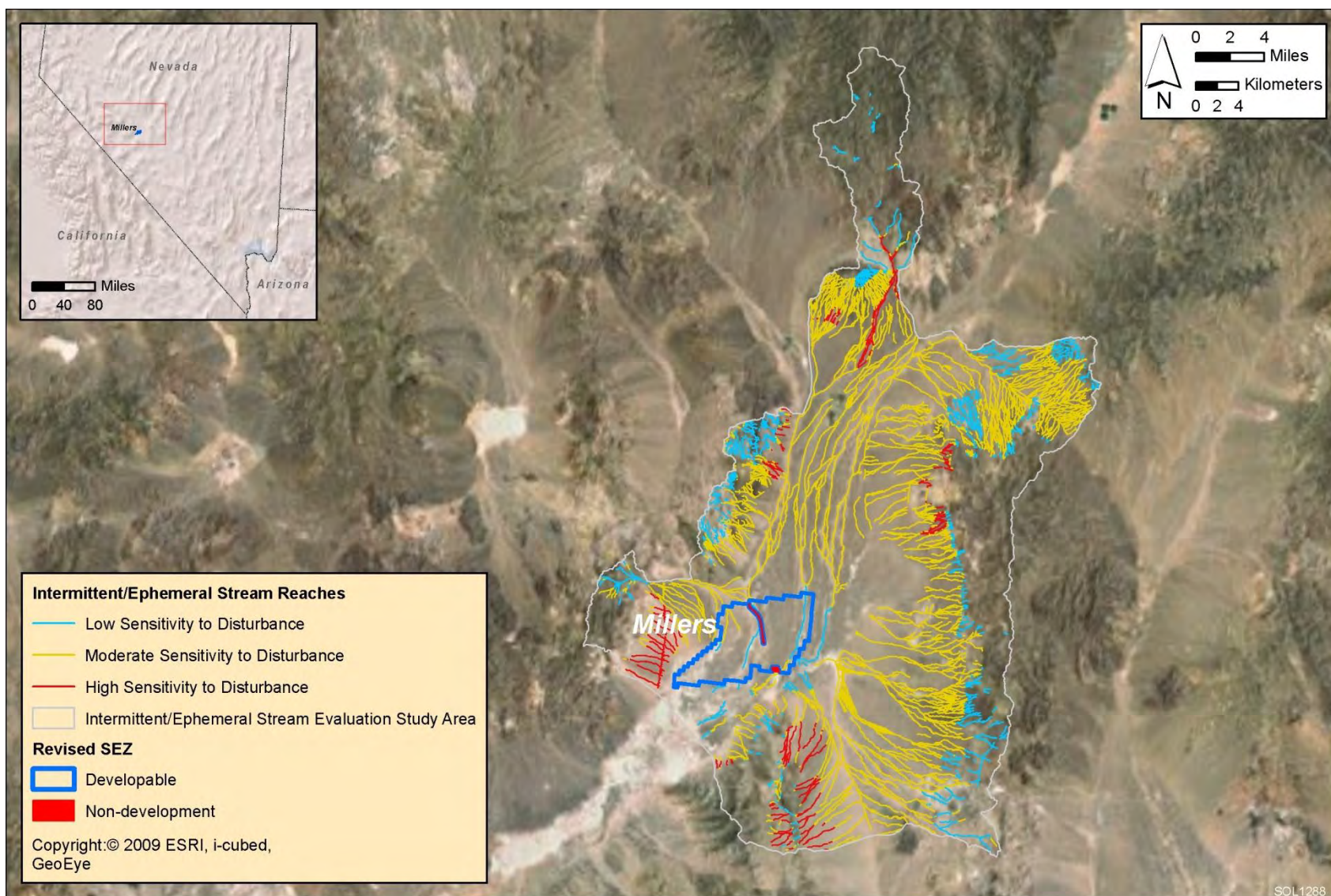


FIGURE 11.7.9.2-1 Intermittent/Ephemeral Stream Channel Sensitivity to Surface Disturbances in the Vicinity of the Proposed Millers SEZ as Revised

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

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

- ^a To convert ac-ft to m³, multiply by 1,234.
- ^b Flint et al. (2004).
- ^c NDWR (2012).
- ^d Storage estimates include the northern Big Smoky Valley basin.
- ^e Defined by the NDWR.

Source: Rush and Schroer (1971).

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

The estimated total water use requirements during the peak construction year are as high as 3,300 ac-ft/yr (4.1 million m³/yr). The total annual water requirements for operations can be categorized as low, medium, and high groundwater pumping scenarios that represent full build-out of the SEZ assuming PV, dry-cooled parabolic trough, and wet-cooled parabolic trough, respectively (a 30% operational time was considered for all solar facility types on the basis of operations estimates for utility-scale solar energy facilities). This categorization results in water use estimates that range from 77 to 13,468 ac-ft/yr (95,000 to 16.6 million m³/yr), or a total of 1,540 to 269,360 ac-ft (1.9 million to 332 million m³) over the 20-year operation period.

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

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

^a Values in parentheses used for model.

^b To convert ac-ft to m³, multiply by 1,234.

Source: Rush and Schroer (1971).

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

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

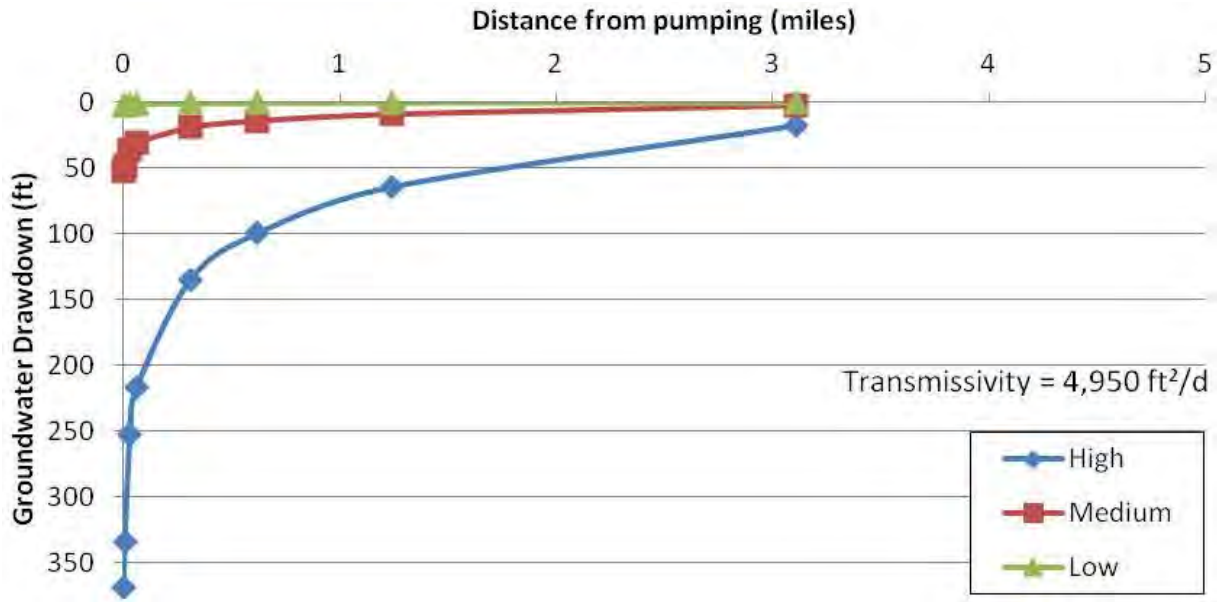


FIGURE 11.7.9.2-2 Estimated One-Dimensional Groundwater Drawdown Resulting from High, Medium, and Low Groundwater Pumping Scenarios over the 20-Year Operational Period at the Proposed Millers SEZ as Revised

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

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

11.7.9.2.3 Off-Site Impacts: Roads and Transmission Lines

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

1 dust suppression, and potable supply for workers) could be trucked to the construction area from
2 an off-site source. If this occurred, water use impacts at the SEZ would be negligible. The Draft
3 Solar PEIS assessment of impacts on water resources from road and transmission line
4 construction remains valid.
5
6

7 ***11.7.9.2.4 Summary of Impacts on Water Resources*** 8

9 The additional information and analyses of water resources presented in this update agree
10 with information provided in the Draft Solar PEIS, which indicates that the Millers SEZ is
11 located in a high-elevation desert valley where water resources are primarily groundwater, along
12 with intermittent/ephemeral surface water features. Groundwater is primarily found in the basin-
13 fill aquifer that is connected to adjacent valleys. Current groundwater withdrawals for the basin
14 are unknown, but current water right allocations far exceed the perennial yield for the basin set
15 by the NDWR. The majority of water right allocations are committed to mining and irrigation
16 purposes, but it is not known how much of these allotted water rights are in use.
17

18 Disturbances to intermittent/ephemeral streams within the Millers SEZ could potentially
19 affect groundwater recharge and ecological habitats, particularly in the vicinity of the alluvial fan
20 in the northwest portion of the SEZ. In addition, portions of the braided stream channel of Ione
21 Wash extend outside the non-development regions of the SEZ. As stated in the Draft Solar PEIS,
22 floodplain maps in the adjacent Nye County suggest that 100-year floodplain areas would be
23 associated with the braided channels of Ione Wash and Peavine Creek, and design features in
24 Appendix A of this Final PEIS describe the need to avoid identified 100-year floodplain areas.
25

26 Groundwater withdrawals associated with the high pumping scenario have the potential
27 to cause significant groundwater drawdown in the vicinity of the SEZ. The magnitude of
28 groundwater drawdown could affect groundwater flow patterns, which could limit groundwater
29 supply to the wetland and dry lake areas located in the southwestern portion of Big Smoky
30 Valley. Groundwater withdrawals associated with the low and medium pumping scenarios have
31 much less impact on groundwater drawdown. Aside from these modeled groundwater drawdown
32 ranges, the transfer of water rights in the overallocated Big Smoky Valley–Tonopah Flat
33 groundwater basin may limit the amount of groundwater available for solar energy facilities,
34 which would ultimately be decided by the water right review process conducted by the NDWR.
35

36 Predicting impacts associated with groundwater withdrawal is often difficult given the
37 heterogeneity of aquifer characteristics, the long time period between the onset of pumping and
38 its effects, and limited data. One of the primary mitigation measures to protect water resources is
39 the implementation of long-term monitoring and adaptive management (see Section A.2.4 of
40 Appendix A). For groundwater, this requires the combination of monitoring and modeling to
41 fully identify the temporal and spatial extent of potential impacts. The framework for a long-term
42 monitoring program would need to be created for the Millers SEZ once development planning
43 begins.
44
45

1 **11.7.9.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on surface water and
4 groundwater are described in Section A.2.2 of Appendix A of this Final Solar PEIS.
5 Implementing the programmatic design features will provide some protection of and reduce
6 impacts on water resources.
7

8 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
9 comments received as applicable, the following SEZ-specific design feature has been identified:
10

- 11 • Groundwater analyses suggest that full build-out of wet-cooled technologies is
12 not feasible; for mixed-technology development scenarios, any proposed wet-
13 cooled projects should utilize water conservation practices.
14

15 The need for additional SEZ-specific design features will be identified through the
16 process of preparing parcels for competitive offer and subsequent project-specific analysis.
17
18

19 **11.7.10 Vegetation**
20

21 **11.7.10.1 Affected Environment**
22

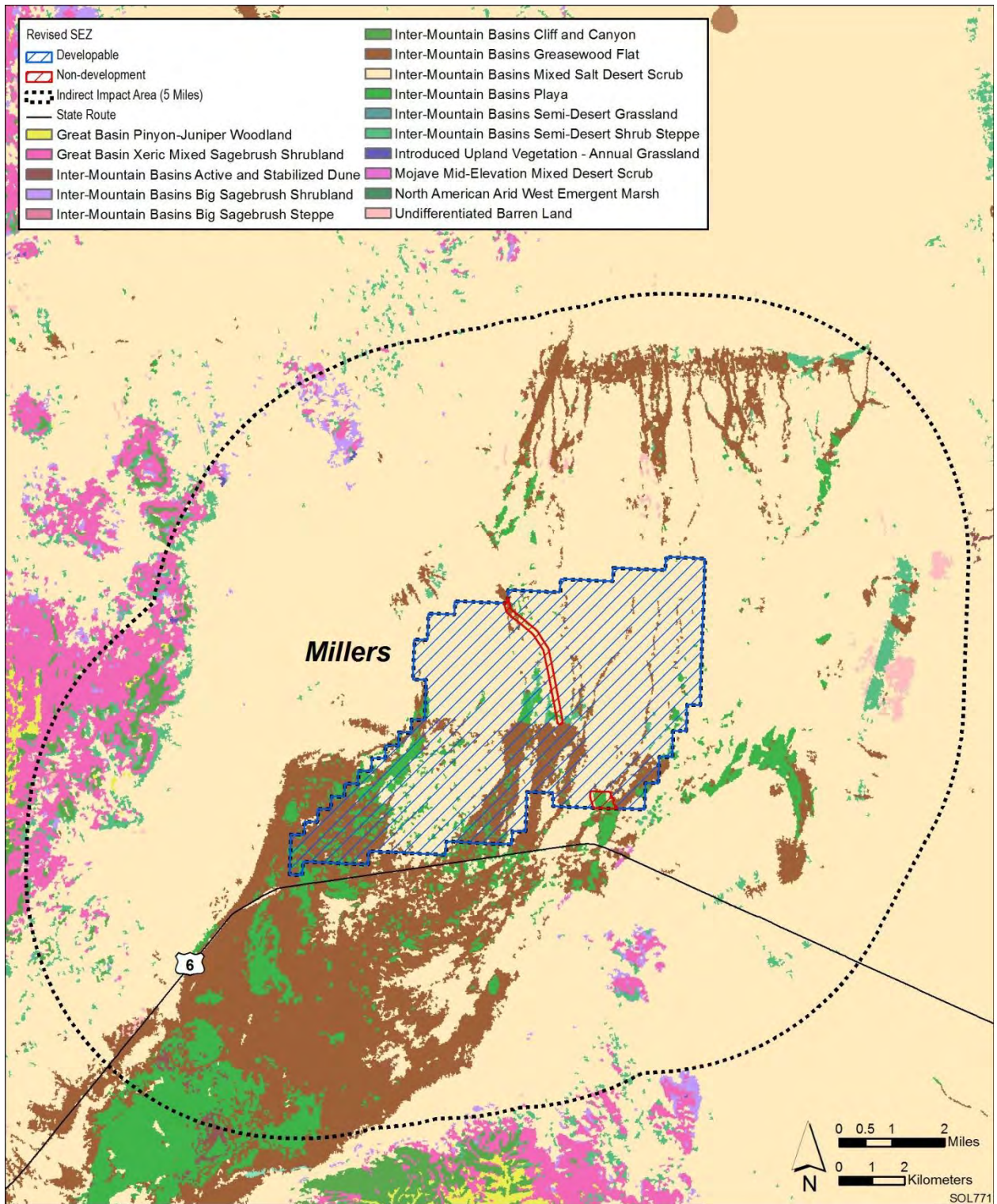
23 The Millers SEZ was revised to identify 253 acres (1.0 km²) along Ione Wash and a
24 wetland located in the southeast portion of the SEZ as non-development areas.
25
26

27 As presented in Section 11.7.10.1 of the Draft Solar PEIS, 5 cover types were identified
28 within the area of the proposed Millers SEZ, while 15 cover types were identified in the area of
29 indirect effects. Sensitive habitats on the SEZ include desert dry washes, wetland, and playa.
30 Figure 11.7.10.1-1 shows the cover types within the affected area of the Miller SEZ as revised.
31
32

33 **11.7.10.2 Impacts**
34

35 As presented in the Draft Solar PEIS, the construction of solar energy facilities within the
36 proposed Millers SEZ would result in direct impacts on plant communities because of the
37 removal of vegetation within the facility footprint during land-clearing and land-grading
38 operations. Approximately 80% of the SEZ would be expected to be cleared with full
39 development of the SEZ. As a result of the changes to the proposed SEZ developable area,
40 approximately 13,227 acres (54 km²) would be cleared.
41

42 Overall impact magnitude categories were based on professional judgment and include
43 (1) *small*: a relatively small proportion ($\leq 1\%$) of the cover type within the SEZ region would be
44 lost; (2) *moderate*: an intermediate proportion (> 1 but $\leq 10\%$) of a cover type would be lost; and
45 (3) *large*: $> 10\%$ of a cover type would be lost.
46



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

1 **11.7.10.2.1 Impacts on Native Species**
2

3 The analysis presented in the Draft Solar PEIS based on the original Millers SEZ
4 developable area indicated that development would result in a moderate impact on two land
5 cover types and a small impact on all other land cover types occurring within the SEZ
6 (Table 11.7.10.1-1 in the Draft Solar PEIS). Development within the revised Millers SEZ could
7 still directly affect all the cover types evaluated in the Draft Solar PEIS; the impact magnitudes
8 would remain unchanged compared to original estimates in the Draft Solar PEIS.
9

10 Direct impacts on dry washes, playas, and unmapped wetlands could still occur. Indirect
11 impacts on habitats associated with wetlands and playas within or near the SEZ, as described in
12 the Draft Solar PEIS, could also occur, including impacts on groundwater-dependent
13 communities in the region, such as those in the vicinity of playas.
14

15
16 **11.7.10.2.2 Impacts from Noxious Weeds and Invasive Plant Species**
17

18 As presented in the Draft Solar PEIS, land disturbance from project activities and indirect
19 effects of construction and operation within the Millers SEZ could potentially result in the
20 establishment or expansion of noxious weeds and invasive species populations, potentially
21 including those species listed in Section 11.7.10.1 of the Draft Solar PEIS. Impacts such as
22 reduced restoration success and possible widespread habitat degradation could still occur;
23 however, a small reduction in the potential for such impacts would result from the reduced
24 developable area of the SEZ.
25

26
27 **11.7.10.3 SEZ-Specific Design Features and Design Feature Effectiveness**
28

29 Required programmatic design features that would reduce impacts on vegetation are
30 described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific species and
31 habitats will determine how programmatic design features are applied, for example:
32

- 33 • Dry washes, playas, and unmapped wetlands within the SEZ shall be avoided
34 to the extent practicable, and any impacts minimized and mitigated in
35 consultation with appropriate agencies. A buffer area shall be maintained
36 around wetlands, playas, and dry washes to reduce the potential for impacts.
37
- 38 • Appropriate engineering controls shall be used to minimize impacts on the
39 playa wetland and other playas, as well as Ione Wash shrub communities, dry
40 washes, and greasewood flat habitats within the SEZ, and downstream
41 occurrences resulting from surface water runoff, erosion, sedimentation,
42 altered hydrology, accidental spills, or fugitive dust deposition to these
43 habitats. Appropriate buffers and engineering controls will be determined
44 through agency consultation.
45

- 1 • Groundwater withdrawals shall be limited to reduce the potential for indirect
2 impacts on plant communities that access groundwater, such as those in the
3 vicinity of playas. Potential impacts on springs associated with the Tonopah
4 Flat basin or other hydrologically connected basins shall be determined
5 through hydrological studies.
6
- 7 • A qualified botanist or plant ecologist should survey for candelaria blazing
8 star (*Mentzelia candelariae*) during a period when it is flowering and easily
9 documented prior to any construction activities within the SEZ. If individuals
10 are located, individuals or populations shall be avoided through fencing and
11 flagging of the area, including an appropriate buffer zone.
12

13 It is anticipated that the implementation of these programmatic design features will
14 reduce a high potential for impacts from invasive species and impacts on dry washes, playas,
15 wetlands, and springs to a minimal potential for impact. Residual impacts on groundwater-
16 dependent habitats could result from limited groundwater withdrawal and the like; however,
17 it is anticipated that these impacts would be avoided in the majority of instances.
18

19 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration
20 of comments received as applicable, no SEZ-specific design features for vegetation have been
21 identified. Some SEZ-specific design features may be identified through the process of preparing
22 parcels for competitive offer and subsequent project-specific analysis.
23

24

25 **11.7.11 Wildlife and Aquatic Biota**

26

27 For the assessment of potential impacts on wildlife and aquatic biota, overall impact
28 magnitude categories were based on professional judgment and include (1) *small*: a relatively
29 small proportion ($\leq 1\%$) of the species' habitat within the SEZ region would be lost;
30 (2) *moderate*: an intermediate proportion (> 1 but $\leq 10\%$) of the species' habitat would be lost;
31 and (3) *large*: $> 10\%$ of the species' habitat would be lost.
32

33

34 **11.7.11.1 Amphibians and Reptiles**

35

36

37 ***11.7.11.1.1 Affected Environment***

38

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

1 **11.7.11.1.2 Impacts**

2
3 As presented in the Draft Solar PEIS, solar energy development within the proposed
4 Millers SEZ could affect potentially suitable habitats for the representative amphibian and reptile
5 species. The analysis presented in the Draft Solar PEIS for the Millers SEZ indicated that
6 development would result in a small overall impact on all representative amphibian and reptile
7 species (Table 11.7.11.1-1 in the Draft Solar PEIS). The reduction in the developable area of the
8 Millers SEZ would result in reduced habitat impacts for all representative amphibian and reptile
9 species; the resultant impact levels for all the representative species would still be small.

10
11
12 **11.7.11.1.3 SEZ-Specific Design Features and Design Feature Effectiveness**

13
14 Required programmatic design features that would reduce impacts on amphibian and
15 reptile species are described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the
16 implementation of required programmatic design features, impacts on amphibian and reptile
17 species will be reduced.

18
19 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
20 comments received as applicable, the following SEZ-specific design feature has been identified:

- 21
22 • Wash and playa habitats should be avoided. The Ione Wash and a small
23 wetland area in the SEZ have been identified as non-development areas, but
24 other avoidable wash and playa habitats may exist within the SEZ.

25
26 If SEZ-specific design features are implemented in addition to required programmatic
27 design features, impacts on amphibian and reptile species would be small. The need for
28 additional SEZ-specific design features will be identified through the process of preparing
29 parcels for competitive offer and subsequent project-specific analysis.

30
31
32 **11.7.11.2 Birds**

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35 **11.7.11.2.1 Affected Environment**

36
37 As presented in the Draft Solar PEIS, a large number of bird species could occur or have
38 potentially suitable habitat within the affected area of the proposed Millers SEZ. Representative
39 bird species identified in the Draft Solar PEIS included (1) shorebirds: killdeer (*Charadrius*
40 *vociferus*); (2) passerines: ash-throated flycatcher (*Myiarchus cinerascens*), Bewick's wren
41 (*Thryomanes bewickii*), common poorwill (*Phalaenoptilus nuttallii*), common raven (*Corvus*
42 *corax*), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*),
43 ladder-backed woodpecker (*Picoides scalaris*), Le Conte's thrasher (*Toxostoma lecontei*), lesser
44 nighthawk (*Chordeiles acutipennis*), loggerhead shrike (*Lanius ludovicianus*), northern
45 mockingbird (*Mimus polyglottos*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza*
46 *belli*), Say's phoebe (*Sayornis saya*), and western kingbird (*Tyrannus verticalis*); (3) raptors:

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

6 7 8 **11.7.11.2.2 Impacts** 9

10 As presented the Draft Solar PEIS, solar energy development within the Millers SEZ
11 could affect potentially suitable bird habitats. The analysis presented in the Draft Solar PEIS
12 indicated that development would result in a small overall impact on most representative bird
13 species and a moderate impact on the killdeer (Table 11.7.11.2-1 in the Draft Solar PEIS). The
14 reduction in the developable area of the Millers SEZ would result in reduced impacts on habitat
15 for all representative bird species; the resultant impact levels for all the representative bird
16 species would be small. Most habitats suitable for the killdeer are among the areas now identified
17 as undevelopable within the SEZ.
18

19 20 **11.7.11.2.3 SEZ-Specific Design Features and Design Feature Effectiveness** 21

22 Required programmatic design features that would reduce impacts on bird species are
23 described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of
24 required programmatic design features, impacts on bird species will be reduced.
25

26 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
27 comments received as applicable, the following SEZ-specific design feature has been identified:
28

- 29 • Wash and playa habitats should be avoided. The Ione Wash and a small
30 wetland area in the SEZ have been identified as non-development areas, but
31 other avoidable wash and playa habitats may exist within the SEZ.
32

33 If SEZ-specific design features are implemented in addition to required programmatic
34 design features, impacts on bird species would be small. The need for additional SEZ-specific
35 design features will be identified through the process of preparing parcels for competitive offer
36 and subsequent project-specific analysis.
37

38 39 **11.7.11.3 Mammals** 40

41 42 **11.7.11.3.1 Affected Environment** 43

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

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

17 18 19 **11.7.11.3.2 Impacts**

20
21 As presented in the Draft Solar PEIS, solar energy development within the proposed
22 Millers SEZ could affect potentially suitable habitats of mammal species. The analysis presented
23 in the Draft Solar PEIS indicated that development would result in a small overall impact on all
24 representative mammal species analyzed (Table 11.7.11.3-1 in the Draft Solar PEIS). The
25 reduction in the developable area of the Millers SEZ would result in reduced habitat impacts for
26 all representative mammal species; however, resultant impact levels for all the representative
27 mammal species would still be small. This conclusion also applies to mapped year-round
28 pronghorn habitat that occurs within the Millers SEZ.

29 30 31 **11.7.11.3.3 SEZ-Specific Design Features and Design Feature Effectiveness**

32
33 Required programmatic design features that would reduce impacts on mammals are
34 described in Section A.2.2 of Appendix A of this Final Solar PEIS. With the implementation of
35 required programmatic design features, impacts on mammal species will be reduced.

36
37 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
38 comments received as applicable, the following SEZ-specific design features have been
39 identified:

- 40
41
- 42 • The fencing around the solar energy development should not block the free
43 movement of mammals, particularly big game species.
 - 44 • Wash and playa habitats should be avoided. The Ione Wash and a small
45 wetland area in the SEZ have been identified as non-development areas, but
46 other avoidable wash and playa habitats may exist within the SEZ.

1 If these SEZ-specific design features are implemented in addition to the required
2 programmatic design features, impacts on mammal species would be small. The need for
3 additional SEZ-specific design features will be identified through the process of preparing
4 parcels for competitive offer and subsequent project specific analysis.
5
6

7 **11.7.11.4 Aquatic Biota**

8
9

10 **11.7.11.4.1 Affected Environment**

11

12 There are no perennial streams or water bodies present in the proposed Millers SEZ.
13 Updates to the Draft Solar PEIS include the following:
14

- 15 • The intermittent/ephemeral Ione Wash, which runs for approximately 3 mi
16 (5 km) through the center of the proposed Millers SEZ, has now been
17 identified as a non-development area.
18
- 19 • Wetlands within the SEZ have been identified as non-development areas.
20
- 21 • The route of a new transmission line described in the Draft Solar PEIS is no
22 longer assumed.
23

24 The surface water features in the Millers SEZ have not been surveyed for aquatic biota.
25 As stated in Appendix C of the Supplement to the Draft Solar PEIS, site surveys can be
26 conducted at the project-specific level to characterize the aquatic biota, if present, within the
27 SEZ.
28
29

30 **11.7.11.4.2 Impacts**

31

32 The types of impacts on aquatic habitats and biota that could occur from the development
33 of utility-scale solar energy facilities are discussed in Section 5.10.3 of the Draft Solar PEIS and
34 this Final Solar PEIS. Aquatic habitats, including wetland areas, present on or near the Millers
35 SEZ could be affected by solar energy development in a number of ways, including (1) direct
36 disturbance, (2) deposition of sediments, (3) changes in water quantity, and (4) degradation of
37 water quality. The impact assessment provided in the Draft Solar PEIS remains valid, with the
38 following update:
39

- 40 • The intermittent/ephemeral Ione Wash and wetlands within the SEZ have
41 been identified as non-development areas; therefore, they would not be
42 directly affected by construction activities. However, as described in the
43 Draft Solar PEIS, streams and wetlands could be affected indirectly by solar
44 development activities within the SEZ.
45
46

1 **11.7.11.4.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce impacts on aquatic biota are
4 described in Section A.2.2 of Appendix A of this Final Solar PEIS. SEZ-specific resources and
5 conditions will be considered when programmatic design features are applied, for example:
6

- 7 • Appropriate engineering controls shall be implemented to minimize the
8 amount of contaminants and sediment entering Ione Wash and the wetlands
9 within the SEZ.
10
- 11 • Development shall avoid any additional wetlands identified during future site-
12 specific fieldwork.
13

14 It is anticipated that implementation of these programmatic design features will reduce
15 impacts on aquatic biota, and if the utilization of water from groundwater or surface water
16 sources is adequately controlled to maintain sufficient water levels in nearby aquatic habitats, the
17 potential impacts on aquatic biota from solar energy development at the Millers SEZ would be
18 small.
19

20 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
21 comments received as applicable, no SEZ-specific design features for aquatic biota have been
22 identified. Some SEZ-specific design features may be identified through the process of preparing
23 parcels for competitive offer and subsequent project-specific analysis.
24
25

26 **11.7.12 Special Status Species**
27

28 **11.7.12.1 Affected Environment**
29

30 As presented in the Draft Solar PEIS, 19 special status species were identified that
31 could occur or have potentially suitable habitat within the affected area of the proposed Millers
32 SEZ. Since publication of the Draft Solar PEIS, 11 additional special status species have been
33 identified that could potentially occur in the affected area based on county-level occurrences
34 and the presence of potentially suitable habitat. These 11 special status species are all designated
35 sensitive species by the Nevada BLM office and include (1) plants: Tecopa bird's beak
36 (*Cordylanthus tecopensis*); (2) invertebrates: Wong's pyrg (*Pyrgulopsis wongi*); and (3) birds:
37 golden eagle, loggerhead shrike, and long-eared owl; and (4) mammals: big brown bat, Brazilian
38 free-tailed bat, California myotis, hoary bat, long-legged myotis, and silver-haired bat. These
39 additional species are discussed below.
40
41

42 **Tecopa Bird's Beak.** The Tecopa bird's beak is a plant species in the figwort family that
43 is designated as sensitive by the Nevada BLM. This species was not analyzed for the Millers
44 SEZ in the Draft Solar PEIS. This species is known from Esmeralda and Nye Counties in
45 Nevada, as well as Inyo County, California. It inhabits open, moist alkali-crust clay soils of
46

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

5
6
7 **Wong's Pyrg.** The Wong's pyrg is a freshwater springsnail that is known from the
8 Owens River drainage and the Deep Springs, Fish Lake, and Huntoon Valleys in Inyo County,
9 California, as well as Mineral County, Nevada (Hershler 1994). Although potentially suitable
10 habitat for this species does not occur on the SEZ, this species is known to occur in aquatic
11 habitats in Mineral County, Nevada, approximately 48 mi (77 km) southwest of the SEZ.
12 Although none of these species occur within 5 mi (8 km) of the SEZ, their habitats could be
13 affected by groundwater withdrawals to serve solar energy development on the SEZ.

14
15
16 **Golden Eagle.** The golden eagle is an uncommon to common permanent resident in
17 southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS.
18 The species inhabits rolling foothills, mountain areas, and desert shrublands. It nests on cliff
19 faces and in large trees in open areas. Potentially suitable foraging habitat for this species may
20 occur in the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of
21 an evaluation of SWReGAP land cover types, there is no suitable nesting habitat within the area
22 of direct effects, but about 720 acres (3 km²) of cliff and rock outcrop habitat that may be
23 potentially suitable nesting habitat occurs in the area of indirect effects.

24
25
26 **Loggerhead Shrike.** The loggerhead shrike is a common winter resident in lowlands and
27 foothills of southern Nevada. This species was not analyzed for the Millers SEZ in the Draft
28 Solar PEIS. The species occurs in open habitats with shrubs, trees, utility lines, or other perches.
29 The highest densities of this species occur in open-canopied foothill forests. On the basis of an
30 evaluation of the SWReGAP habitat suitability model for this species, potentially suitable
31 foraging habitat for the loggerhead shrike may occur on the SEZ and throughout the area of
32 indirect effects (Table 11.7.12.1-1).

33
34
35 **Long-Eared Owl.** The long-eared owl is an uncommon year-round resident in southern
36 Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The
37 species inhabits desert shrubland environments in proximity to riparian areas such as desert
38 washes. It nests in trees using old nests from other birds or squirrels. Potentially suitable
39 foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects
40 (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, no suitable
41 nesting habitat occurs within the SEZ, but about 54 acres (0.2 km²) of pinyon-juniper woodlands
42 that may be potentially suitable nesting habitat occurs in the area of indirect effects.

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

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

TABLE 11.7.12.1-1 (Cont.)

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

TABLE 11.7.12.1-1 (Cont.)

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

TABLE 11.7.12.1-1 (Cont.)

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

TABLE 11.7.12.1-1 (Cont.)

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

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

^b BLM-S = listed as sensitive by the BLM.

Footnotes continued on next page.

TABLE 11.7.12.1-1 (Cont.)

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- ^c Potentially suitable habitat was determined by using SWReGAP habitat suitability models (USGS 2004, 2007). Area of potentially suitable habitat for each species is presented for the SEZ region, which is defined as the area within 50 mi (80 km) of the SEZ center.
- ^d Maximum area of potentially suitable habitat that could be affected relative to availability within the SEZ region. Habitat availability for each species within the region was determined by using SWReGAP habitat suitability models (USGS 2004, 2007). This approach probably overestimates the amount of suitable habitat in the project area.
- ^e Direct effects within the SEZ consist of the ground-disturbing activities associated with construction and the maintenance of an altered environment associated with operations.
- ^f Area of indirect effects was assumed to be the area adjacent to the SEZ within 5 mi (8 km) of the SEZ boundary where ground-disturbing activities would not occur. Indirect effects include effects from surface runoff, dust, noise, lighting, and so on from project developments. The potential degree of indirect effects would decrease with increasing distance away from the SEZ.
- ^g Overall impact magnitude categories were based on professional judgment and are as follows: (1) *small*: $\leq 1\%$ 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 $\leq 10\%$ of the population or its habitat would be lost and the activity would result in a measurable but moderate (not destabilizing) change in carrying capacity or population size in the affected area; (3) *large*: $>10\%$ of a population or its habitat would be lost and the activity would result in a large, measurable, and destabilizing change in carrying capacity or population size in the affected area. Note that much greater weight was given to the magnitude of direct effects because those effects would be difficult to mitigate. Design features would reduce most indirect effects to negligible levels.
- ^h Species-specific mitigations are suggested here, but final mitigations should be developed in consultation with state and federal agencies and should be based on pre-disturbance surveys.
- ⁱ To convert acres to km^2 , multiply by 0.004047.
- ^j To convert mi to km, multiply by 1.6093.

1 **Big Brown Bat.** The big brown bat is a fairly common year-round resident in southern
2 Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The big
3 brown bat is uncommon in desert habitats but may occur in desert shrublands in close proximity
4 to water sources. The species inhabits desert shrubland environments in proximity to riparian
5 areas such as desert washes. It roosts in buildings, caves, mines, and trees. Potentially suitable
6 foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects
7 (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
8 suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However,
9 approximately 54 acres (0.2 km²) of woodland habitat (pinyon-juniper) and 720 acres (3 km²) of
10 cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area of
11 indirect effects.
12
13

14 **Brazilian Free-Tailed Bat.** The Brazilian free-tailed bat is a fairly common year-round
15 resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft
16 Solar PEIS. The species inhabits woodlands, shrublands, and grasslands. It roosts in caves and
17 crevices. Potentially suitable foraging habitat for this species may occur on the SEZ and
18 throughout the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of
19 SWReGAP land cover types, potentially suitable roosting habitat (forests and rock outcrops)
20 does not occur on the SEZ. However, approximately 720 acres (3 km²) of cliff and rock outcrop
21 habitat that may be potentially suitable roosting habitat occurs in the area of indirect effects.
22
23

24 **California Myotis.** The California myotis is a fairly common year-round resident in
25 southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The
26 species inhabits desert, chaparral, woodlands, and forests. It roosts primarily in crevices but will
27 also use buildings, mines, and hollow trees. Potentially suitable foraging habitat for this species
28 may occur on the SEZ and throughout the area of indirect effects (Table 11.7.12.1-1). On the
29 basis of an evaluation of SWReGAP land cover types, potentially suitable roosting habitat
30 (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres
31 (0.2 km²) of woodland habitat (pinyon-juniper) and 720 acres (3 km²) of cliff and rock outcrop
32 habitat that may be potentially suitable roosting habitat occur in the area of indirect effects.
33
34

35 **Hoary Bat.** The hoary bat is a fairly common year-round resident in southern Nevada.
36 This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. The species
37 inhabits woodlands, foothills, desert shrublands, and chaparral. It roosts primarily in trees.
38 Potentially suitable foraging habitat for this species may occur on the SEZ and throughout
39 the area of indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP
40 land cover types, potentially suitable roosting habitat (forests) does not occur on the SEZ
41 (Table 11.7.12.1-1). However, approximately 54 acres (0.2 km²) of woodland habitat (pinyon-
42 juniper) that may be potentially suitable roosting habitat occurs in the area of indirect effects.
43
44

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

1 Solar PEIS. This species is uncommon in desert and arid grassland environments and most
2 common in woodlands above 4,000 ft (1,291 m) elevation. It forages in chaparral, scrub,
3 woodlands, and desert shrublands and roosts in trees, caves, and crevices. Potentially suitable
4 foraging habitat for this species may occur on the SEZ and throughout the area of indirect effects
5 (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
6 suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However,
7 approximately 54 acres (0.2 km²) of woodland habitat (pinyon-juniper) and 720 acres (3 km²) of
8 cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in the area of
9 indirect effects.

10
11
12 **Silver-Haired Bat.** The silver-haired bat is an uncommon year-round resident in
13 southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS.
14 The species inhabits coniferous forests, foothill woodlands, and montane riparian habitats. It
15 may also forage in desert shrublands. This species primarily roosts in hollow trees. Potentially
16 suitable foraging habitat for this species may occur on the SEZ and throughout the area of
17 indirect effects (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land
18 cover types, potentially suitable roosting habitat (forests) does not occur on the SEZ
19 (Table 11.7.12.1-1). However, approximately 54 acres (0.2 km²) of woodland habitat (pinyon-
20 juniper) that may be potentially suitable roosting habitat occurs in the area of indirect effects.

21 22 23 **11.7.12.2 Impacts**

24
25 Overall impact magnitude categories were based on professional judgment and include
26 (1) *small*: a relatively small proportion ($\leq 1\%$) of the special status species' habitat within the
27 SEZ region would be lost; (2) *moderate*: an intermediate proportion (>1 but $\leq 10\%$) of the special
28 status species' habitat would be lost; and (3) *large*: $>10\%$ of the special status species' habitat
29 would be lost.

30
31 As presented in the Draft Solar PEIS, solar energy development within the Millers SEZ
32 could affect potentially suitable habitats of special status species. The analysis presented in the
33 Draft Solar PEIS for the Millers SEZ indicated that development would result in no impact or a
34 small overall impact on all special status species. Development within the Millers SEZ could still
35 affect the same 19 species evaluated in the Draft Solar PEIS; however, the reduction in the
36 developable area would result in reduced (and still small) impact levels compared to original
37 estimates in the Draft Solar PEIS.

38
39 In addition, impacts on the 11 BLM-designated sensitive species that were not evaluated
40 for the Millers SEZ in the Draft Solar PEIS are discussed below and in Table 11.7.12.1-1. The
41 impact assessment for these additional species was carried out in the same way as for those
42 species analyzed in the Draft Solar PEIS (Section 11.7.12.2 of the Draft Solar PEIS).

43
44
45 **Tecopa Bird's Beak.** The Tecopa bird's beak was not analyzed for the Millers SEZ in
46 the Draft Solar PEIS. This species is known from Esmeralda and Nye Counties in Nevada, as

1 well as Inyo County, California. It inhabits open, moist alkali-crust clay soils of deep springs,
2 seeps, and outflow drainages at elevations between 2,100 and 4,900 ft (640 and 1,494 m). Other
3 potentially suitable habitat types include mesic meadows and playa margins. On the basis of
4 SWReGAP land cover types, approximately 1,000 acres (4 km²) of potentially suitable habitat
5 on the revised area of the Millers SEZ could be directly affected by construction and operations
6 (Table 11.7.12.1-1). This direct effects area represents 1.0% of potentially suitable habitat in the
7 SEZ region. About 6,600 acres (27 km²) of potentially suitable habitat occurs in the area of
8 indirect effects; this area represents about 6.8% of the available suitable foraging habitat in the
9 SEZ region (Table 11.7.12.1-1). Most of this suitable habitat is represented by playa habitat.

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

24
25 The implementation of design features and complete avoidance or limitations of
26 groundwater withdrawals from the regional groundwater system would reduce impacts on the
27 Tecopa bird's beak and other groundwater-dependent species to small or negligible levels.
28 Impacts can be better quantified for specific projects once water needs are identified and through
29 application of a regional groundwater model.

30
31
32 **Wong's Pyrg.** The Wong's pyrg is a freshwater springsnail that is known from the
33 Owens River drainage and the Deep Springs, Fish Lake, and Huntoon Valleys in Inyo County,
34 California, as well as Mineral County, Nevada (Hershler 1994). Although potentially suitable
35 habitat for this species does not occur on the SEZ, this species is known to occur in aquatic
36 habitats in Mineral County, Nevada, approximately 48 mi (77 km) southwest of the SEZ.
37 Groundwater withdrawn from the regional groundwater basin to serve construction and
38 operations of solar energy facilities on the SEZ could affect aquatic and riparian habitats for
39 this species. Such impacts would result from the lowering of the water table and alteration of
40 hydrologic processes.

41
42 Impacts of groundwater depletion from solar energy development in the revised area
43 of the Millers SEZ cannot be quantified without identification of the cumulative amount of
44 groundwater withdrawals needed to support development on the SEZ. Consequently, the overall
45 impact on the Wong's pyrg could range from small to large and would depend in part on the
46 solar energy technology deployed, the scale of development within the SEZ, the type of cooling

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

3
4 The implementation of design features and complete avoidance or limitations of
5 groundwater withdrawals from the regional groundwater system would reduce impacts on the
6 Wong's pyrg and other groundwater-dependent species to small or negligible levels. Impacts can
7 be better quantified for specific projects once water needs are identified and through application
8 of a regional groundwater model.

9
10
11 **Golden Eagle.** The golden eagle was not analyzed for the Millers SEZ in the Draft Solar
12 PEIS. This species is an uncommon to common permanent resident in southern Nevada, and
13 potentially suitable foraging habitat is expected to occur in the affected area of the Millers SEZ.
14 Approximately 15,000 acres (61 km²) of potentially suitable foraging habitat on the SEZ could
15 be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area
16 represents 0.3% of potentially suitable habitat in the SEZ region. About 120,100 acres (486 km²)
17 of potentially suitable foraging habitat occurs in the area of indirect effects; this area represents
18 about 2.5% of the available suitable foraging habitat in the SEZ region (Table 11.7.12.1-1). Most
19 of this area could serve as foraging habitat (open shrublands). On the basis of an evaluation of
20 SWReGAP land cover types, there is no suitable nesting habitat within the area of direct effects.
21 However, about 720 acres (3 km²) of cliff and rock outcrop habitat that may be potentially
22 suitable nesting habitat occurs in the area of indirect effects.

23
24 The overall impact on the golden eagle from construction, operation, and
25 decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered
26 small, because the amount of potentially suitable foraging habitat for this species in the area of
27 direct effects represents less than 1% of potentially suitable foraging habitat in the SEZ region.
28 The implementation of programmatic design features is expected to be sufficient to reduce
29 indirect impacts on this species to negligible levels. Avoidance of direct impacts on all
30 potentially suitable foraging habitat is not a feasible way to mitigate impacts on the golden eagle,
31 because potentially suitable shrubland is widespread throughout the area of direct effects and
32 readily available in other portions of the affected area.

33
34
35 **Loggerhead Shrike.** The loggerhead shrike was not analyzed for the Millers SEZ in the
36 Draft Solar PEIS. This species is a common winter resident in lowlands and foothills of southern
37 Nevada. Approximately 15,000 acres (61 km²) of potentially suitable foraging habitat on
38 the SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This
39 direct effects area represents 0.3% of potentially suitable habitat in the SEZ region. About
40 120,000 acres (486 km²) of potentially suitable foraging habitat occurs in the area of
41 indirect effects; this area represents about 2.5% of the available suitable foraging habitat in
42 the SEZ region (Table 11.7.12.1-1).

43
44 The overall impact on the loggerhead shrike from construction, operation, and
45 decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered
46 small, because the amount of potentially suitable foraging habitat for this species in the area of

1 direct effects represents less than 1% of potentially suitable foraging habitat in the SEZ region.
2 The implementation of programmatic design features is expected to be sufficient to reduce
3 indirect impacts on this species to negligible levels. Avoidance of direct impacts on all
4 potentially suitable foraging habitat is not a feasible way to mitigate impacts on the loggerhead
5 shrike, because potentially suitable shrubland is widespread throughout the area of direct effects
6 and is readily available in other portions of the affected area.
7
8

9 **Long-Eared Owl.** The long-eared owl was not analyzed for the Millers SEZ in the Draft
10 Solar PEIS. This species is an uncommon to common permanent resident in southern Nevada
11 and potentially suitable foraging habitat is expected to occur in the affected area of the Millers
12 SEZ. Approximately 15,000 acres (61 km²) of potentially suitable foraging habitat on the SEZ
13 could be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects
14 area represents 0.3% of potentially suitable habitat in the SEZ region. About 119,600 acres
15 (484 km²) of potentially suitable foraging habitat occurs in the area of indirect effects; this area
16 represents about 2.5% of the available suitable foraging habitat in the SEZ region
17 (Table 11.7.12.1-1).
18

19 The overall impact on the long-eared owl from construction, operation, and
20 decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered
21 small, because the amount of potentially suitable foraging habitat for this species in the area of
22 direct effects represents less than 1% of potentially suitable foraging habitat in the SEZ region.
23 The implementation of programmatic design features is expected to be sufficient to reduce
24 indirect impacts on this species to negligible levels. Avoidance of direct impacts on all
25 potentially suitable foraging habitat is not a feasible way to mitigate impacts on the long-eared
26 owl, because potentially suitable shrubland is widespread throughout the area of direct effects
27 and is readily available in other portions of the affected area.
28
29

30 **Big Brown Bat.** The big brown bat is a fairly common year-round resident in southern
31 Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. Suitable
32 roosting habitats (caves, forests, and buildings) are not expected to occur on the SEZ, but the
33 availability of suitable roosting sites in the area of indirect effects has not been determined.
34 Approximately 16,400 acres (66 km²) of potentially suitable foraging habitat on the SEZ could
35 be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area
36 represents about 0.4% of potentially suitable foraging habitat in the region. About 121,300 acres
37 (491 km²) of potentially suitable foraging habitat occurs in the area of indirect effects; this area
38 represents about 2.7% of the available suitable foraging habitat in the region (Table 11.7.12.1-1).
39 On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting
40 habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres
41 (0.2 km²) of woodland habitat (pinyon-juniper) and 720 acres (3 km²) of cliff and rock outcrop
42 habitat that may be potentially suitable roosting habitat occurs in the area of indirect effects.
43

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

1 effects represents less than 1% of potentially suitable habitat in the region. The implementation
2 of programmatic design features is expected to be sufficient to reduce indirect impacts on this
3 species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible
4 way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout
5 the area of direct effects and is readily available in other portions of the SEZ region.
6
7

8 **Brazilian Free-Tailed Bat.** The Brazilian free-tailed bat is a fairly common year-round
9 resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft
10 Solar PEIS. Suitable roosting habitats (caves, forests, and buildings) are not expected to occur on
11 the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been
12 determined. Approximately 16,400 acres (66 km²) of potentially suitable foraging habitat on the
13 revised SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This
14 direct effects area represents about 0.4% of potentially suitable foraging habitat in the region.
15 About 122,000 acres (494 km²) of potentially suitable foraging habitat occurs in the area of
16 indirect effects; this area represents about 2.9% of the available suitable foraging habitat in the
17 region (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types,
18 potentially suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ.
19 However, approximately 54 acres (0.2 km²) of woodland habitat (pinyon-juniper) and 720 acres
20 (3 km²) of cliff and rock outcrop habitat that may be potentially suitable roosting habitat occur in
21 the area of indirect effects.
22

23 The overall impact on the Brazilian free-tailed bat from construction, operation, and
24 decommissioning of utility-scale solar energy facilities within the revised Millers SEZ is
25 considered small, because the amount of potentially suitable habitat for this species in the
26 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
27 implementation of programmatic design features is expected to be sufficient to reduce indirect
28 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
29 is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is
30 widespread throughout the area of direct effects and is readily available in other portions of the
31 SEZ region.
32
33

34 **California Myotis.** The California myotis is a fairly common year-round resident in
35 southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS.
36 Suitable roosting habitats (forests and rock outcrops) are not expected to occur on the SEZ, but
37 the availability of suitable roosting sites in the area of indirect effects has not been determined.
38 Approximately 16,400 acres (66 km²) of potentially suitable foraging habitat on the SEZ could
39 be directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area
40 represents about 0.5% of potentially suitable foraging habitat in the region. About 121,100 acres
41 (490 km²) of potentially suitable foraging habitat occurs in the area of indirect effects; this area
42 represents about 3.5% of the available suitable foraging habitat in the region (Table 11.7.12.1-1).
43 On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting
44 habitat (forests and rock outcrops) does not occur on the SEZ. However, approximately 54 acres
45 (0.2 km²) of woodland habitat (pinyon-juniper) and 720 acres (3 km²) of cliff and rock outcrop
46 habitat that may be potentially suitable roosting habitat occur in the area of indirect effects.

1 The overall impact on the California myotis from construction, operation, and
2 decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered
3 small, because the amount of potentially suitable habitat for this species in the area of direct
4 effects represents less than 1% of potentially suitable habitat in the region. The implementation
5 of programmatic design features is expected to be sufficient to reduce indirect impacts on this
6 species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible
7 way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout
8 the area of direct effects and is readily available in other portions of the SEZ region.
9

10
11 **Hoary Bat.** The hoary bat is a fairly common year-round resident in southern Nevada.
12 This species was not analyzed for the Millers SEZ in the Draft Solar PEIS. Suitable roosting
13 habitats (forests) are not expected to occur on the SEZ, but the availability of suitable roosting
14 sites in the area of indirect effects has not been determined. Approximately 4,700 acres (19 km²)
15 of potentially suitable foraging habitat on the SEZ could be directly affected by construction and
16 operations (Table 11.7.12.1-1). This direct effects area represents 0.4% of potentially suitable
17 foraging habitat in the region. About 27,300 acres (110 km²) of potentially suitable foraging
18 habitat occurs in the area of indirect effects; this area represents about 2.5% of the available
19 suitable foraging habitat in the region (Table 11.7.12.1-1). On the basis of an evaluation of
20 SWReGAP land cover types, potentially suitable roosting habitat does not occur on the SEZ.
21 However, approximately 54 acres (0.2 km²) of woodland habitat (pinyon-juniper) that may be
22 potentially suitable roosting habitat occurs in the area of indirect effects.
23

24 The overall impact on the hoary bat from construction, operation, and decommissioning
25 of utility-scale solar energy facilities within the Millers SEZ is considered small, because the
26 amount of potentially suitable habitat for this species in the area of direct effects represents less
27 than 1% of potentially suitable habitat in the region. The implementation of programmatic design
28 features is expected to be sufficient to reduce indirect impacts on this species to negligible levels.
29 Avoidance of all potentially suitable foraging habitat is not a feasible way to mitigate impacts,
30 because potentially suitable foraging habitat is widespread throughout the area of direct effects
31 and is readily available in other portions of the SEZ region.
32

33
34 **Long-Legged Myotis.** The long-legged myotis is a common to uncommon year-round
35 resident in southern Nevada. This species was not analyzed for the Millers SEZ in the Draft
36 Solar PEIS. Suitable roosting habitats (forests and rock outcrops) are not expected to occur on
37 the SEZ, but the availability of suitable roosting sites in the area of indirect effects has not been
38 determined. Approximately 16,400 acres (66 km²) of potentially suitable foraging habitat on the
39 SEZ could be directly affected by construction and operations (Table 11.7.12.1-1). This direct
40 effects area represents about 0.4% of potentially suitable foraging habitat in the region. About
41 121,200 acres (490 km²) of potentially suitable foraging habitat occurs in the area of indirect
42 effects; this area represents about 3.3% of the available suitable foraging habitat in the region
43 (Table 11.7.12.1-1). On the basis of an evaluation of SWReGAP land cover types, potentially
44 suitable roosting habitat (forests and rock outcrops) does not occur on the SEZ. However,
45 approximately 54 acres (0.2 km²) of woodland habitat (pinyon-juniper) and 720 acres (3 km²) of

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

3
4 The overall impact on the long-legged myotis from construction, operation, and
5 decommissioning of utility-scale solar energy facilities within the Millers SEZ is considered
6 small, because the amount of potentially suitable habitat for this species in the area of direct
7 effects represents less than 1% of potentially suitable habitat in the region. The implementation
8 of programmatic design features is expected to be sufficient to reduce indirect impacts on this
9 species to negligible levels. Avoidance of all potentially suitable foraging habitat is not a feasible
10 way to mitigate impacts, because potentially suitable foraging habitat is widespread throughout
11 the area of direct effects and is readily available in other portions of the SEZ region.

12
13
14 **Silver-Haired Bat.** The silver-haired bat is an uncommon year-round resident in
15 southern Nevada. This species was not analyzed for the Millers SEZ in the Draft Solar PEIS.
16 Suitable roosting habitats (forests) are not expected to occur on the SEZ, but the availability of
17 suitable roosting sites in the area of indirect effects has not been determined. Approximately
18 13,300 acres (54 km²) of potentially suitable foraging habitat on the revised SEZ could be
19 directly affected by construction and operations (Table 11.7.12.1-1). This direct effects area
20 represents about 0.3% of potentially suitable foraging habitat in the region. About 103,000 acres
21 (417 km²) of potentially suitable foraging habitat occurs in the area of indirect effects; this area
22 represents about 2.5% of the available suitable foraging habitat in the region (Table 11.7.12.1-1).
23 On the basis of an evaluation of SWReGAP land cover types, potentially suitable roosting
24 habitat does not occur on the SEZ. However, approximately 54 acres (0.2 km²) of woodland
25 habitat (pinyon-juniper) that may be potentially suitable roosting habitat occurs in the area of
26 indirect effects.

27
28 The overall impact on the silver-haired bat from construction, operation, and
29 decommissioning of utility-scale solar energy facilities within the revised Millers SEZ is
30 considered small, because the amount of potentially suitable habitat for this species in the
31 area of direct effects represents less than 1% of potentially suitable habitat in the region. The
32 implementation of programmatic design features is expected to be sufficient to reduce indirect
33 impacts on this species to negligible levels. Avoidance of all potentially suitable foraging habitat
34 is not a feasible way to mitigate impacts, because potentially suitable foraging habitat is
35 widespread throughout the area of direct effects and is readily available in other portions of the
36 SEZ region.

37 38 39 **11.7.12.3 SEZ-Specific Design Features and Design Feature Effectiveness**

40
41 Required programmatic design features are described in Section A.2.2 of Appendix A of
42 the Draft Solar PEIS. SEZ-specific resources and conditions will determine how programmatic
43 design features are applied, for example:

- 44
45 • Pre-disturbance surveys shall be conducted within the SEZ to determine the
46 presence and abundance of special status species, including those identified in

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

- 10 • Coordination shall be conducted with the USFWS and NDOW for the
11 Crescent Dunes aegialian scarab beetle, Crescent Dunes serican scarab beetle,
12 and greater sage-grouse (*Centrocercus urophasianus*)—species that are
13 candidates or under review for ESA listing. Coordination would identify an
14 appropriate survey protocol, and mitigation requirements, which may include
15 avoidance, minimization, translocation, or compensation.
16
- 17 • Avoiding or limiting groundwater withdrawals from the regional groundwater
18 basin to serve solar energy development on the SEZ will reduce or prevent
19 impacts on the following groundwater-dependent special status species that
20 may occur more than 5 mi (8 km) from the SEZ boundary: Tecopa bird’s beak
21 and Wong’s pyrg.
22

23
24 It is anticipated that implementation of the programmatic design features will reduce the
25 majority of impacts on the special status species from habitat disturbance and groundwater use.
26

27 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
28 comments received as applicable, no SEZ-specific design features have been identified. Some
29 SEZ-specific design features may be identified through the process of preparing parcels for
30 competitive offer and subsequent project-specific analysis. Projects will comply with terms and
31 conditions set forth by the USFWS Biological Opinion resulting from the programmatic
32 consultations and any necessary project-specific ESA 7 consultations.
33
34

35 **11.7.13 Air Quality and Climate**

36
37 Except as noted below, the information for air quality and climate presented for the
38 affected environment of the Draft Solar PEIS remains valid.
39
40

41 **11.7.13.1 Affected Environment**

42 43 **11.7.13.1.1 Existing Air Emissions**

44
45
46 The Draft Solar PEIS presented Esmeralda County emissions data for 2002. More
47 recent data for 2008 (EPA 2011a) were reviewed for this Final Solar PEIS. The two emissions

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

6 ***11.7.13.1.2 Air Quality***

7
8 The calendar quarterly average NAAQS of 1.5 µg/m³ for lead (Pb) presented in
9 Table 11.7.13.1-2 of the Draft Solar PEIS has been replaced by the rolling 3-month standard
10 (0.15 µg/m³). The federal 24-hour and annual SO₂ and 1-hour O₃ standards have been revoked
11 as well (EPA 2011b). These changes will not affect the modeled air quality impacts presented in
12 this update. Nevada State Ambient Air Quality Standards (SAAQS) have not been changed.

15 **11.7.13.2 Impacts**

18 ***11.7.13.2.1 Construction***

21 **Methods and Assumptions**

23 Except as noted below, the methods and modeling assumptions are the same as those
24 presented in the Draft Solar PEIS. The developable area of the proposed Millers SEZ was
25 reduced by about 2% from 16,787 acres (67.9 km²) to 16,534 acres (66.9 km²). Given this small
26 change, remodeling was not warranted, and the modeled air quality impacts and conclusions
27 presented in the Draft Solar PEIS (as summarized below) remain valid.¹

30 **Results**

32 Predicted 24-hour and annual PM₁₀ and 24-hour PM_{2.5} concentration levels could exceed
33 the standard levels at the SEZ boundaries and in the immediate surrounding areas during the
34 construction of solar facilities. To reduce potential impacts on ambient air quality and in
35 compliance with programmatic design features, aggressive dust control measures would be used.
36 Potential particulate air quality impacts on nearby communities would not exceed standard
37 levels. Impacts from construction activities are not anticipated to exceed Class I PSD PM₁₀
38 increments at the nearest federal Class I area (John Muir WA in California). Construction
39 activities are not subject to the PSD program, and the comparison provides only a screen for

¹ At this programmatic level, detailed information on construction activities, such as facility size, type of solar technology, heavy equipment fleet, activity level, work schedule, and so forth, is not known; thus air quality modeling cannot be conducted. Therefore, it has been assumed that an area of 6,000 acres (24.28 km²) in total would be disturbed continuously; the modeling results and discussion here should be interpreted in that context. During the site-specific project phase, more detailed information would be available and more realistic air quality modeling analysis could be conducted. It is likely that impacts on ambient air quality predicted for specific projects would be much lower than those in this Final Solar PEIS.

1 gauging the magnitude of the impact. Accordingly, it is anticipated that impacts of construction
2 activities on ambient air quality would be moderate and temporary.
3

4 Given the small change in developable area, emissions from construction equipment and
5 vehicles would be almost the same as those identified in the Draft Solar PEIS. Any potential
6 impacts on AQRVs at nearby federal Class I areas would be about the same as those in the Draft
7 Solar PEIS, and the conclusions in the Draft Solar PEIS remain valid. Construction-related
8 emissions are temporary and thus would cause some unavoidable but short-term impacts.
9

10 11 ***11.7.13.2.2 Operations*** 12

13 The reduction of about 2% in developable area of the proposed Millers SEZ decreases the
14 generation capacity and annual power generation by a similar percentage and thus potentially
15 avoided emissions presented in the Draft Solar PEIS. Updated estimates for emissions potentially
16 avoided by full solar development of the proposed Millers SEZ can be obtained from the table in
17 the Draft Solar PEIS by reducing the tabulated emissions shown in Table 11.7.13.2-2 of the Draft
18 Solar PEIS by 1.5%. For example, depending on the technology used, up to 3,116 tons/yr of NO_x
19 (= 98.5% × the lower end value of 3,164 tons/yr tabulated in the Draft Solar PEIS) could be
20 avoided by full solar development of the proposed Millers SEZ as revised for this Final Solar
21 PEIS. These tabulated results are consistent with, but slightly smaller than, the results presented
22 in the Draft Solar PEIS. Solar facilities built in the Millers SEZ could be more important than
23 those built in other states in terms of reducing fuel combustion-related emissions.
24
25

26 ***11.7.13.2.3 Decommissioning and Reclamation*** 27

28 The discussion in the Draft Solar PEIS remains valid. Decommissioning and reclamation
29 activities would be of short duration, and their potential impacts would be moderate and
30 temporary.
31
32

33 **11.7.13.3 SEZ-Specific Design Features and Design Feature Effectiveness** 34

35 Required programmatic design features that would reduce air quality impacts are
36 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Limiting dust generation
37 during construction and operations is a required programmatic design feature under the BLM
38 Solar Energy Program. These extensive fugitive dust control measures would keep off-site PM
39 levels as low as possible during construction.
40

41 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
42 comments received as applicable, no SEZ-specific design features for air quality have been
43 identified for the proposed Millers SEZ. Some SEZ-specific design features may be identified
44 through the process of preparing parcels for competitive offer and subsequent project-specific
45 analysis.
46

1 **11.7.14 Visual Resources**

2
3
4 **11.7.14.1 Affected Environment**

5
6 No boundary revisions were identified for the proposed SEZ in the Supplement to the
7 Draft Solar PEIS; however, non-development areas were identified. For the proposed Millers
8 SEZ, 253 acres (1.0 km²) of the Ione Wash and a small wetland area in the southern portion of
9 the SEZ were identified as non-development areas. The remaining developable area within the
10 SEZ is 16,534 acres (66.9 km²).

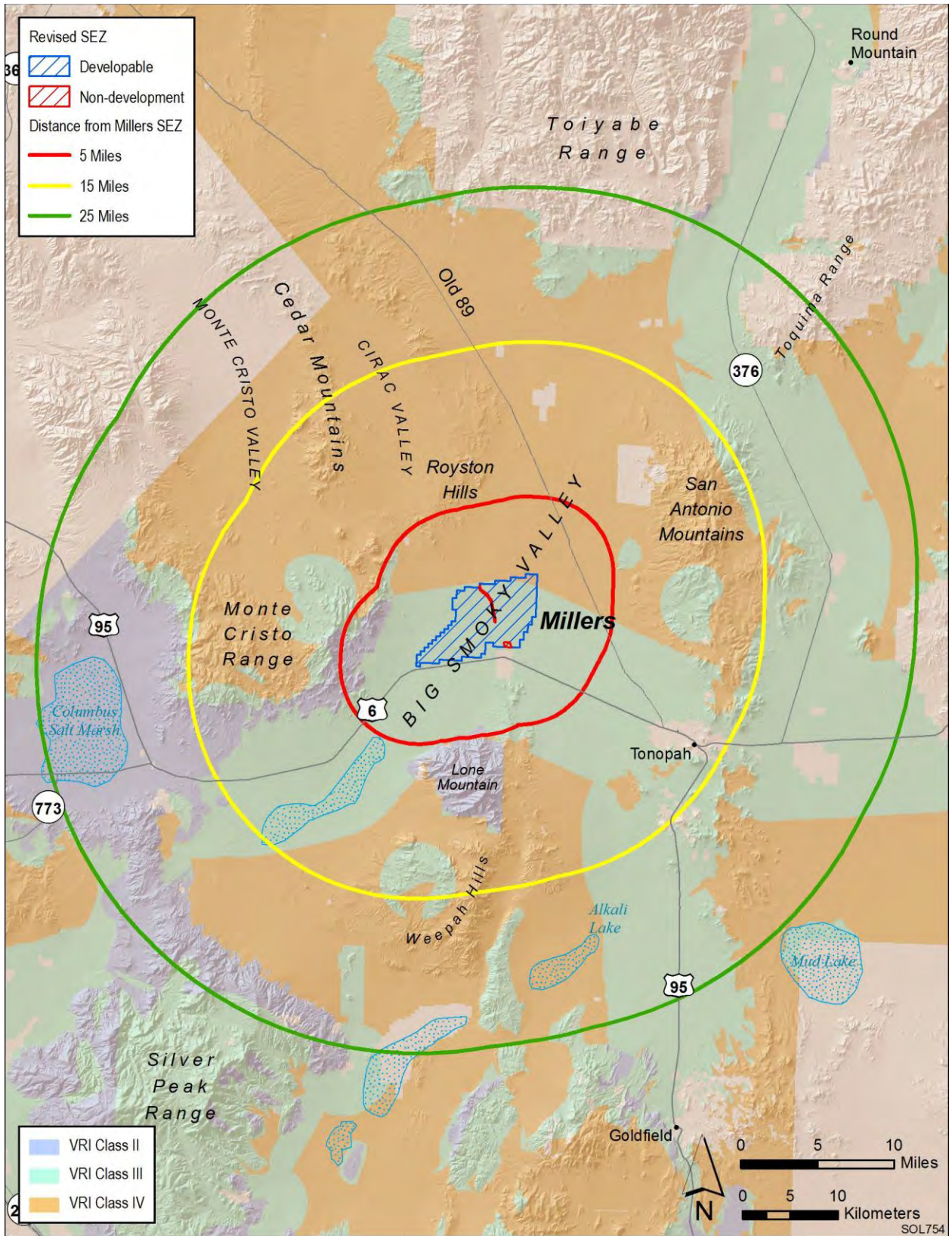
11
12 An updated VRI map for the SEZ and surrounding lands is shown in Figure 11.7.14.1-1;
13 it provides information collected in BLM’s 2010 and 2011 VRI, which was finalized in
14 October 2011 (BLM 2011a). As shown, the updated VRI values for the SEZ primarily are VRI
15 Class III, indicating moderate visual values; a small portion in the northeast corner of the SEZ is
16 VRI Class IV, indicating low visual values. The SEZ area received a low scenic quality rating,
17 because it lacks topographic variability, diverse vegetation, water features, and range of colors.
18 The SEZ area’s adjacent scenery was rated as a positive scenic quality attribute. The SEZ area
19 received a high sensitivity rating, because of the amount of use, public interest, and adjacent land
20 uses within the U.S. 95 corridor.

21
22 On the basis of the 2011 VRI class assignments, lands in the Battle Mountain District
23 Office within the 25-mi (40-km), 650-ft (198-m) viewshed of the SEZ now include 26,184 acres
24 (106.0 km²) of VRI Class II areas, 206,124 acres (834.2 km²) of VRI Class III areas, and
25 284,059 acres (1,149.5 km²) of VRI Class IV areas.

26
27 As indicated in the Draft Solar PEIS, the Tonopah RMP (BLM 1997) indicates that the
28 SEZ and surrounding area are managed as VRM Class IV, which permits major modification of
29 the existing character of the landscape. Since the publication of the Draft Solar PEIS, the Battle
30 Mountain District Office has been preparing a new comprehensive RMP and associated EIS. The
31 RMP/EIS will replace the existing 1997 Tonopah RMP and 1986 Shoshone-Eureka RMP. The
32 RMP revision process began in December 2010 (BLM 2011b).

33
34
35 **11.7.14.2 Impacts**

36
37 The summary of impacts provided in the Draft Solar PEIS remains valid, as follows.
38 Development within the SEZ could create a visually complex landscape that would contrast
39 strongly with the strongly horizontal landscape of the flat valley in which the SEZ is located.
40 Large visual impacts on the SEZ and surrounding lands within the SEZ viewshed would be
41 associated with solar energy development because of major modification of the character of the
42 existing landscape. The potential exists for additional impacts from construction and operation of
43 transmission lines and access roads within the SEZ.



1

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

1 The SEZ is in an area of low scenic quality. Residents of Tonopah and nearby areas,
2 workers, and visitors to the area may experience visual impacts from solar energy facilities
3 located within the SEZ (as well as from any associated access roads and transmission lines) as
4 they travel area roads. The residents nearest to the SEZ could be subjected to large visual
5 impacts from solar energy development within the SEZ. In addition, U.S. 6 passes very close to
6 the SEZ, and travelers on that road could be subjected to strong visual contrasts from solar
7 development within the SEZ, but typically their exposure would be brief. Utility-scale solar
8 energy development within the proposed Millers SEZ could cause weak levels of visual contrast
9 for some residents of Tonopah, generally for persons in the westernmost parts of the community.
10
11

12 **11.7.14.3 SEZ-Specific Design Features and Design Feature Effectiveness**

13

14 Required programmatic design features that would reduce impacts on visual resources are
15 described in Section A.2.2 of Appendix A of this Final Solar PEIS. While application of the
16 programmatic design features would reduce potential visual impacts somewhat, the degree of
17 effectiveness of these design features can only be assessed at the site- and project-specific level.
18 Given the large scale, reflective surfaces, and strong regular geometry of utility-scale solar
19 energy facilities and the lack of screening vegetation and landforms within the SEZ viewshed,
20 siting the facilities away from sensitive visual resource areas and other sensitive viewing areas
21 would be the primary means of mitigating visual impacts. The effectiveness of other visual
22 impact mitigation measures generally would be limited.
23

24 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
25 comments received as applicable, no SEZ-specific design features to address impacts on visual
26 resources in the Millers SEZ have been identified in this Final Solar PEIS. Some SEZ-specific
27 design features may be identified through the process of preparing parcels for competitive offer
28 and subsequent project-specific analysis.
29
30

31 **11.7.15 Acoustic Environment**

32
33

34 **11.7.15.1 Affected Environment**

35

36 The developable area of the proposed Millers SEZ was reduced by about 2% from
37 16,787 acres (67.9 km²) to 16,534 acres (66.9 km²); the boundaries of the SEZ were not
38 changed, and thus the information for affected environment remains the same as presented in the
39 Draft Solar PEIS.
40
41

42 **11.7.15.2 Impacts**

43
44

45 **11.7.15.2.1 Construction**

46

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

1 SEZ remain the same as presented in the Draft Solar PEIS. Construction within the SEZ would
2 cause negligible unavoidable, but localized, short-term noise impacts on the nearest residences
3 located more than 10 mi (16 km) north and east–southeast of the SEZ. No adverse vibration
4 impacts are anticipated from construction activities, including pile driving for dish engines.
5
6

7 ***11.7.15.2.2 Operations***

8
9 The conclusions presented in the Draft Solar PEIS remain valid. Even if TES were used,
10 operating parabolic trough or power tower facilities would result in minimal adverse noise
11 impacts on the nearest residences. The noise levels would also depend on background noise
12 levels and meteorological conditions.
13

14 Potential noise impacts on the nearest residences from operating dish engines would be
15 expected to be minimal with predicted noise levels well below the EPA guideline of 55 dBA L_{dn}.
16

17 Small changes in the developable area of the proposed SEZ would not affect the
18 discussions of vibration, transformer and switchyard noise, and transmission line corona
19 discharge presented in the Draft Solar PEIS. Noise impacts from these sources would be
20 negligible.
21
22

23 ***11.7.15.2.3 Decommissioning and Reclamation***

24
25 The conclusions presented in the Draft Solar PEIS remain valid. Decommissioning and
26 reclamation activities would be of short duration, and their potential noise impacts would be
27 minimal and temporary.
28
29

30 **11.7.15.3 SEZ-Specific Design Features and Design Feature Effectiveness**

31
32 Required programmatic design features that would reduce noise impacts are described in
33 Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the programmatic design
34 features will provide some protection from noise impacts.
35

36 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
37 comments received as applicable, no SEZ-specific design features to address noise impacts in the
38 Millers SEZ are required. Some SEZ-specific design features may be identified through the
39 process of preparing parcels for competitive offer and subsequent project-specific analysis.
40
41

42 **11.7.16 Paleontological Resources**

43 44 45 **11.7.16.1 Affected Environment**

46
47 Data provided in the Draft Solar PEIS remain valid, with the following updates:

- 1 • The playa deposits in the southern portion of the SEZ are now designated as
2 non-developable areas.
- 3
- 4 • The BLM Regional Paleontologist may have additional information regarding
5 the paleontological potential of the SEZ and be able to verify the PFYC of the
6 SEZ as Class 2 and 3b as used in the Draft Solar PEIS.
- 7
- 8

9 **11.7.16.2 Impacts**

10 The assessment provided in the Draft Solar PEIS remains valid. The potential for impacts
11 in most of the SEZ is unknown, but may be potentially high in some areas. A more detailed look
12 at the geological deposits of the SEZ is needed to determine whether a paleontological survey is
13 warranted.
14

15

16

17 **11.7.16.3 SEZ-Specific Design Features and Design Feature Effectiveness**

18

19 Required programmatic design features that would reduce impacts on paleontological
20 resources are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Impacts would
21 be minimized through the implementation of required programmatic design features, including a
22 stop-work stipulation in the event that paleontological resources are encountered during
23 construction, as described in Section A.2.2 of Appendix A.
24

25 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
26 comments received as applicable, no SEZ-specific design features for paleontological resources
27 have been identified. If the geological deposits for 6% of the SEZ are determined to be consistent
28 with a classification of PFYC Class 2, mitigation of paleontological resources in the alluvial
29 deposits would not likely be necessary. The need for and nature of SEZ-specific design features
30 for 94% of the proposed Millers SEZ would depend on the results of future paleontological
31 investigations. Some SEZ-specific design features may be identified through the process of
32 preparing parcels for competitive offer and subsequent project-specific analysis.
33

34 As additional information on paleontological resources (e.g., from regional
35 paleontologists or from new surveys) becomes available, the BLM will post the data to the
36 project Web site (<http://solareis.anl.gov>) for use by applicants, the BLM, and other stakeholders.
37

38

39 **11.7.17 Cultural Resources**

40

41

42 **11.7.17.1 Affected Environment**

43 Data provided in the Draft Solar PEIS remain valid, with the following updates:
44
45

- 1 • A tribally approved ethnographic study of the proposed Millers SEZ and
2 surrounding area was conducted (SWCA and University of Arizona 2011),
3 and a summary of that study was presented in the Supplement to the Draft
4 Solar PEIS. A number of new potential sites, new cultural landscapes,
5 important water sources, and traditional plants and animals were identified as
6 a result of this study (see Section 11.7.18 for a description of the latter). The
7 completed ethnographic study is available in its entirety on the Solar PEIS Web
8 site (<http://solareis.anl.gov>).
9
- 10 • Water sources important to the Duckwater and Timbisha Shoshone in the
11 Millers SEZ and surrounding area include Pleistocene Lake Tonopah, Peavine
12 Creek, Ione Wash, Cloverdale Creek, and Darrough's Hot Spring.
13
- 14 • Geological features important to the Duckwater and Timbisha Shoshone in the
15 Millers SEZ and surrounding area include the entire Big Smoky Valley, Lone
16 Mountain, the Toiyabe Range, the Toquima Range, the Monte Cristo Range,
17 Weepah Hills, and Royston Hills.
18
- 19 • During a site visit to the proposed Millers SEZ, tribal representatives
20 identified a projectile point and several areas of flaked stone within the SEZ.
21 It is unknown whether these artifacts represented previously recorded sites or
22 whether they were new finds.
23
- 24 • Additional information may be available to characterize the area surrounding
25 the proposed SEZ in the future (after the Final Solar PEIS is completed), as
26 follows:
- 27 – Results of a Class I literature file search to better understand (1) the site
28 distribution pattern in the vicinity of the SEZ, (2) trail networks through
29 existing ethnographic reports, and (3) overall cultural sensitivity of the
30 landscape.
 - 31 – Results of a Class II reconnaissance-level stratified random sample
32 survey of 827 acres (3.3 km²) or roughly 5% of the SEZ. The Class II
33 survey is being conducted by the BLM to meet its ongoing Section 110
34 responsibilities under the NHPA. The objectives of the Class II surveys
35 currently under contract are to reliably predict the density, diversity,
36 and distribution of archaeological sites within each SEZ in Arizona,
37 California, and Nevada and create sensitivity zones based on projected site
38 density, complexity, likely presence of human burials, and/or other tribal
39 concerns. The BLM will continue to request funding to support additional
40 Class II sample inventories in the SEZ areas. Areas of interest, such as
41 dune areas and along washes, as determined through a Class I review, and,
42 if appropriate, subsurface testing of dune and/or colluvium areas should be
43 considered in sampling strategies for future surveys.
 - 44 – Continuation of government-to-government consultation as described in
45 Section 2.4.3 of the Supplement to the Draft Solar PEIS and IM 2012-032
46 (BLM 2011c), including follow-up to recent ethnographic studies covering

1 some SEZs in Nevada and Utah with tribes not included in the original
2 studies to determine whether those tribes have similar concerns.
3
4

5 **11.7.17.2 Impacts**

6

7 As stated in the Draft Solar PEIS, direct impacts on significant cultural resources could
8 occur in the proposed Millers SEZ; however, further investigation is needed. Impacts on cultural
9 resources are possible in the dune areas associated with Lake Tonopah, as well as areas
10 associated with the Millers town site.
11
12

13 **11.7.17.3 SEZ-Specific Design Features and Design Feature Effectiveness**

14

15 Required programmatic design features that would reduce impacts on cultural resources
16 are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Programmatic design
17 features assume that the necessary surveys, evaluations, and consultations will occur.
18

19 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
20 comments received as applicable, the following SEZ-specific design feature for cultural
21 resources has been identified:
22

- 23 • Areas with a high potential for containing significant cultural resources or
24 with a high density of cultural resources should be avoided. However, because
25 of the high likelihood that the area contains prehistoric sites associated with
26 Lake Tonopah and the presence of historic period sites related to the
27 development of the Millers town site, complete avoidance of NRHP-eligible
28 sites may not be possible. In particular, it may not be possible to fully mitigate
29 the loss of such a large number of sites associated with one Pleistocene lake
30 system.
31

32 Additional SEZ-specific design features would be determined in consultation with the
33 Nevada SHPO and affected tribes and would depend on the results of future investigations. Some
34 SEZ-specific design features may be identified through the process of preparing parcels for
35 competitive offer and subsequent project-specific analysis.
36
37

38 **11.7.18 Native American Concerns**

39
40

41 **11.7.18.1 Affected Environment**

42

43 Data provided in the Draft Solar PEIS remain valid, with the following updates:
44

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

1 study was presented in the Supplement to the Draft Solar PEIS. A number of
2 new potential sites, new cultural landscapes, important water sources, and
3 traditional plants and animals were identified as a result of this study. The
4 completed ethnographic study is available in its entirety on the Solar PEIS
5 Web site (<http://solareis.anl.gov>).
6

- 7 • The tribal representatives from both the Duckwater and Timbisha Shoshone
8 Tribes believe that all the cultural resources and landscapes within the
9 proposed Millers SEZ are important in helping both tribes to understand their
10 past, present, and future.
11
- 12 • Crescent Dunes has been identified as an important landscape feature, a
13 geological anomaly known as “singing dunes.” According to tribal
14 representatives, the Crescent Dunes have a great deal of *Puha* (or power) and
15 their ancestors would gather there for ceremonies.
16
- 17 • Tribal representatives of the Duckwater and Timbisha Shoshone Tribes
18 maintain that the Big Smoky Valley connects the people to the surrounding
19 mountains, valleys, and water sources. Areas of particular importance are the
20 Toiyabe and Toquima Ranges, which are associated with origin stories for
21 staple foods such as pine nuts and fish. Seasonal festivals, called Fandangos,
22 were held in Big Smoky Valley as well.
23
- 24 • Geological features identified by tribal representatives as possessing cultural
25 importance include Lone Mountain, the Monte Cristo Range, Weepah Hills,
26 and Royston Hills.
27
- 28 • Late Pleistocene Lake Tonopah, Ione Wash, Peavine Creek, and Cloverdale
29 Creek were identified as important water sources to the Shoshone.
30
- 31 • The following traditional plants have been identified in addition to those listed
32 in Table 11.7.18.1-2 of the Draft Solar PEIS: bud sagebrush (*Picrothamnus*
33 *desertorum*), desert prince’s plume/Indian spinach (*Stanleya pinnata*), desert
34 trumpet (*Eriogonum inflatum*), Douglas rabbitbrush (*Chrysothamnus*
35 *viscidiflorus*), dune evening primrose (*Oenothera deltoides*), horsebrush
36 (*Tetradymia* sp.), Mojave seablite (*Suaeda moquinii*), Nevada smokebush
37 (*Psoralea polydenius*), orange lichen (*Caloplaca trachyphylla*), rubber
38 rabbitbrush (*Ericameria nauseosa*), shadscale (*Atriplex confertifolia*), silver
39 cholla (*Opuntia echinocarpa*), spiny hopsage (*Grayia spinosa*), spiny
40 menodora (*Menodora spinescens*), Whipple’s cholla (*Opuntia whipplei*), and
41 wolfberry (*Lycium* sp.).
42
- 43 • The following traditional animals have been identified in addition to those
44 listed in Table 11.7.18.1-3 of the Draft Solar PEIS: bobcat (*Lynx* sp.), Cougar
45 (*Puma concolor*), mule deer (*Odocoileus hemionus*), pronghorn antelope
46 (*Antilocarpa Americana*), American kestrel (*Falco sparverius*), Gambel’s

1 quail (*Callipepla gambelii*), greater roadrunner (*Geococcyx californianus*),
2 horned lark (*Eremophila alpestris*), killdeer (*Charadrius vociferous*),
3 mourning dove (*Zenaida macroura*), nighthawk (*Chardeiles* sp.), and turkey
4 vulture (*Carhartes aura*).
5
6

7 **11.7.18.2 Impacts**

8

9 The following summary of potential concerns provided in the Draft Solar PEIS remains
10 valid. In the past, the Western Shoshone and Owens Valley Paiutes have expressed concern over
11 project impacts on a variety of resources. While no comments specific to the proposed Millers
12 SEZ have been received from Native American tribes to date, in comments on the scope of the
13 Solar PEIS, the Big Pine Paiute Tribe of the Owens Valley has recommended that the BLM
14 preserve undisturbed lands intact and that recently disturbed lands, such as abandoned farm
15 fields, rail yards, mines, and airfields, be given primary consideration for solar energy
16 development. Potential impacts on existing water supplies were also stated to be a primary
17 concern. The construction of utility-scale solar energy facilities within the proposed SEZ would
18 almost certainly result in the destruction of some plants important to Native Americans and the
19 habitat of some traditionally important animals.
20

21 In addition to the impacts discussed in the Draft Solar PEIS, the ethnographic study
22 conducted for the proposed Millers SEZ identified the following impacts:
23

- 24 • Development within the proposed Millers SEZ will result in visual impacts on
25 Crescent Dunes and interfere with views of Lone Mountain, the Monte Cristo
26 Range, the Toiyabe Range, and the Toquima Range from the location of the
27 proposed SEZ.
28
- 29 • Development of a project area within the SEZ will directly affect culturally
30 important plant and animal resources, because it will likely require the grading
31 of the project area, removal of vegetation, and the destruction of burrows,
32 nests, and migratory habitat.
33
- 34 • OHV use, nonvehicular recreational activities such as hiking, and cattle
35 ranching have been identified by tribal representatives as current impacts
36 on cultural resources, cultural landscapes, traditionally important plants
37 and animals, and water sources in the SEZ and surrounding area (SWCA and
38 University of Arizona 2011).
39
40

41 **11.7.18.3 SEZ-Specific Design Features and Design Feature Effectiveness**

42

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

1 features that would reduce impacts on Native American concerns are described in Section A.2.2
2 of Appendix A of this Final Solar PEIS. For example, impacts would be minimized through the
3 avoidance of sacred sites, water sources, and tribally important plant and animal species.
4 Programmatic design features require that the necessary surveys, evaluations, and consultations
5 would occur. The tribes would be notified regarding the results of archaeological surveys, and
6 they would be contacted immediately upon the discovery of Native American human remains
7 and associated cultural items.
8

9 On the basis of the impact analyses conducted for the Draft Solar PEIS and consideration
10 of comments received as applicable, no SEZ-specific design features to address Native American
11 concerns have been identified. The need for and nature of SEZ-specific design features would be
12 determined during government-to-government consultation with the affected tribes as part of the
13 process of preparing parcels for competitive offer and subsequent project-specific analysis.
14 Potential culturally significant sites and landscapes in the vicinity of the SEZ associated with the
15 Big Smoky Valley, Crescent Dunes, and other nearby geologic features, water sources, and sites
16 and landscapes associated with Lake Tonopah, as well as plant and animal resources, should be
17 considered and discussed during consultations.
18

19 20 **11.7.19 Socioeconomics**

21 22 23 **11.7.19.1 Affected Environment**

24
25 The boundaries of the proposed Millers SEZ have not changed. The socioeconomic ROI,
26 the area in which site employees would live and spend their wages and salaries and into which
27 any in-migration would occur, includes the same counties and communities as described in the
28 Draft Solar PEIS, meaning that no updates to the affected environment information given in the
29 Draft Solar PEIS are required.
30

31 32 **11.7.19.2 Impacts**

33
34 Socioeconomic resources in the ROI around the SEZ could be affected by solar energy
35 development through the creation of direct and indirect employment and income, the generation
36 of direct sales and income taxes, SEZ acreage rental and capacity payments to BLM, the
37 in-migration of solar facility workers and their families, and impacts on local housing markets
38 and on local community service employment. Since the boundaries of the proposed Millers SEZ
39 remain unchanged and the reduction of the developable area is small (less than 2%), the impacts
40 estimated in the Draft Solar PEIS remain valid. During construction, between 346 and 4,578 jobs
41 and between \$21 million and \$278 million in income could be associated with solar development
42 in the SEZ. During operations at full build-out, between 35 and 773 jobs and between
43 \$1.1 million and \$26 million in income could be produced. In-migration of workers and their
44 families would mean between 95 and 1,262 rental housing units would be needed during
45 construction, and between 11 and 228 owner-occupied units during operations.
46

1 **11.7.19.3 SEZ-Specific Design Features and Design Feature Effectiveness**
2

3 Required programmatic design features that would reduce socioeconomic impacts are
4 described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
5 programmatic design features would reduce the potential for socioeconomic impacts during all
6 project phases.
7

8 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
9 comments received as applicable, no SEZ-specific design features to address socioeconomic
10 impacts have been identified for the proposed Millers SEZ. Some SEZ-specific design features
11 may be identified through the process of preparing parcels for competitive offer and subsequent
12 project-specific analysis.
13

14 **11.7.20 Environmental Justice**
15

16 **11.7.20.1 Affected Environment**
17

18 The data presented in the Draft Solar PEIS for the proposed Millers SEZ have not
19 substantially changed. There are no minority or low-income populations in the Nevada or
20 California portions of the 50-mi (80-km) radius of the SEZ.
21
22
23

24 **11.7.20.2 Impacts**
25

26 Potential impacts (e.g., from noise and dust during construction and operations, visual
27 impacts, cultural impacts, and effects on property values) on low-income and minority
28 populations could be incurred as a result of the construction and operation of solar facilities
29 involving each of the four technologies. Impacts are likely to be small, because no minority
30 populations defined by CEQ guidance (CEQ 1997) are within the 50-mi (80-km) radius
31 around the boundary of the SEZ. That is, any adverse impacts of solar projects could not
32 disproportionately affect minority populations. Because there are no low-income populations
33 within the 50-mi (80-km) radius, there could be no impacts on low-income populations.
34
35
36

37 **11.7.20.3 SEZ-Specific Design Features and Design Feature Effectiveness**
38

39 Required programmatic design features that would reduce potential environmental justice
40 impacts are described in Section A.2.2 of Appendix A of this Final Solar PEIS. Implementing the
41 programmatic design features will reduce the potential for such impacts.
42

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

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

3 4 5 **11.7.21 Transportation**

6 7 8 **11.7.21.1 Affected Environment**

9
10 The reduction of less than 2% in the developable area of the proposed Millers SEZ does
11 not change the information on affected environment for transportation provided in the Draft
12 Solar PEIS.

13 14 15 **11.7.21.2 Impacts**

16
17 As stated in the Draft Solar PEIS, the primary transportation impacts are anticipated to be
18 from commuting worker traffic. Single projects could involve up to 1,000 workers each day with
19 an additional 2,000 vehicle trips per day (maximum), or possibly 4,000 vehicle trips per day if
20 two larger projects were to be developed at the same time. The volume of traffic on U.S. 95
21 along the southern edge of the Millers SEZ would represent an increase in traffic of about 100 or
22 200% for one or two projects, respectively, should all traffic access the SEZ in that area.

23
24 Because higher traffic volumes would be experienced during shift changes, traffic on
25 U.S. 95 would experience slowdowns during these time periods in the vicinity of access roads
26 for projects in the SEZ. Local road improvements would be necessary on any portion of U.S. 95
27 that might be developed so as not to overwhelm the local access roads near any site access
28 point(s).

29
30 Solar development within the SEZ would affect public access along OHV routes that are
31 designated open and available for public use. Although open routes crossing areas granted
32 ROWs for solar facilities could be redesignated as closed (see Section 5.5.1 of the Draft Solar
33 PEIS), a programmatic design feature has been included under Recreation (Section A.2.2.6.1 of
34 Appendix A) that requires consideration of replacement of lost OHV route acreage and of access
35 across and to public lands.

36 37 38 **11.7.21.3 SEZ-Specific Design Features and Design Feature Effectiveness**

39
40 Required programmatic design features that would reduce impacts on transportation are
41 described in Section A.2.2 of Appendix A of this Final Solar PEIS. The programmatic design
42 features, including local road improvements, multiple site-access locations, staggered work
43 schedules, and ride-sharing, would all provide some relief to traffic congestion on local roads
44 leading to the SEZ. Depending on the location of solar facilities within the SEZ, more specific
45 access locations and local road improvements could be implemented.

1 On the basis of impact analyses conducted for the Draft Solar PEIS and consideration of
2 comments received as applicable, no SEZ-specific design features to address transportation
3 impacts in the proposed Millers SEZ have been identified. Some SEZ-specific design features
4 may be identified through the process of preparing parcels for competitive offer and subsequent
5 project-specific analysis.
6

7 8 **11.7.22 Cumulative Impacts** 9

10 The analysis of potential impacts in the vicinity of the proposed Millers SEZ presented in
11 the Draft Solar PEIS is still generally applicable for this Final Solar PEIS. The size of the
12 developable area of the proposed SEZ has been reduced by less than 2%. The following sections
13 include an update to the information presented in the Draft Solar PEIS regarding cumulative
14 effects for the proposed Millers SEZ.
15

16 17 **11.7.22.1 Geographic Extent of the Cumulative Impact Analysis** 18

19 The geographic extent of the cumulative impact analysis has not changed. The extent
20 varies based on the nature of the resource being evaluated and the distance at which the impact
21 may occur (e.g., impacts on air quality may have a greater geographic extent than impacts on
22 visual resources). The BLM, USFS, and DoD administer most of the land around the SEZ; there
23 are also some tribal lands nearby at the Yomba Reservation 48 mi (77 km) to the north of the
24 SEZ. The BLM administers approximately 77% of the lands within a 50-mi (80-km) radius of
25 the SEZ.
26

27 28 **11.7.22.2 Overview of Ongoing and Reasonably Foreseeable Future Actions** 29

30 The Draft Solar PEIS included six other proposed SEZs in Nevada. Two of these,
31 Delamar Valley and East Mormon Mountain, have been removed from consideration.
32

33 The list of reasonably foreseeable future actions that relate to energy production and
34 distribution near the proposed Millers SEZ has been updated and is presented in
35 Table 11.7.22.2-1. Projects listed in the table are shown in Figure 11.7.22.2-1.
36

37 Other major ongoing and foreseeable actions within 50 mi (80 km) of the proposed
38 Millers SEZ have been updated and are listed in Table 11.7.22.2-2.
39

40 41 **11.7.22.3 General Trends** 42

43 The information on general trends presented in the Draft Solar PEIS remains valid.
44
45
46

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

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

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

^b To convert to km², multiply by 0.004047.

^c See BLM (2010a) for details.

^d To convert mi to km, multiply by 1.6093.

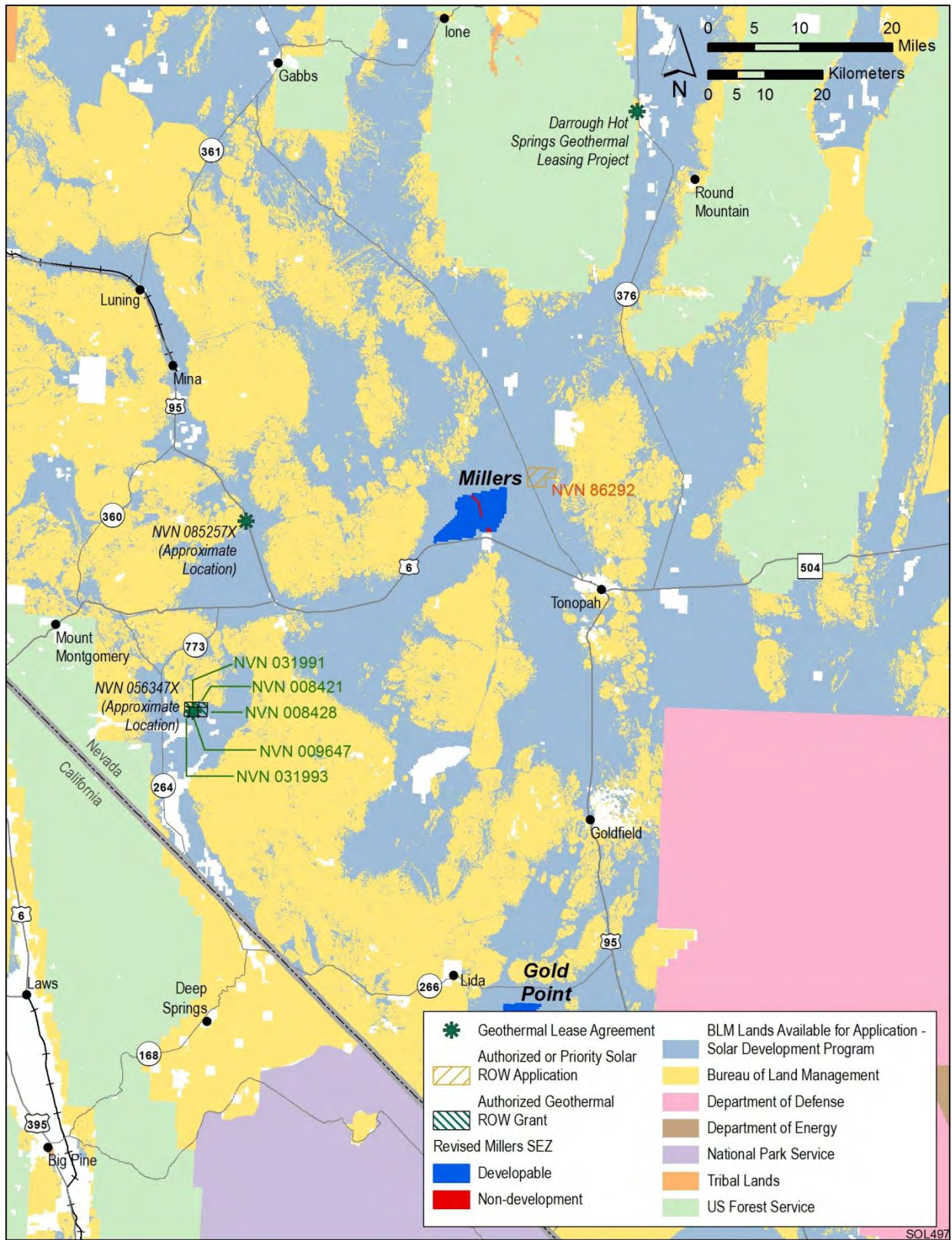
3
4
5 **11.7.22.4 Cumulative Impacts on Resources**
6

7 Total disturbance in the proposed Millers SEZ over 20 years is assumed to be up to about
 8 13,227 acres (53.5 km²) (80% of the entire proposed SEZ). This development would contribute
 9 incrementally to the impacts from other past, present, and reasonably foreseeable future actions
 10 in the region as described in the Draft Solar PEIS. Primary impacts from development in the
 11 Millers SEZ may include impacts on water quantity and quality, air quality, ecological resources
 12 such as habitat and species, cultural and visual resources, and to specially designated lands.
 13

14 No additional major actions have been identified within 50 mi (80km) of the SEZ.
 15 Therefore, the incremental cumulative impacts associated with development in the proposed
 16 Millers SEZ during construction, operation, and decommissioning are expected to be the same as
 17 those projected in the Draft Solar PEIS.
 18
 19

20 **11.7.23 Transmission Analysis**
21

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



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

1 **TABLE 11.7.22.2-2 Other Major Actions near the Proposed Millers SEZ as Revised^a**

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

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

^b To convert mi to km, multiply by 1.6093.

^c See Chemetall (2010) for details.

^d See BLM (2011d) for details.

^e See Golden Phoenix Minerals (2011) for details.

^f See BLM (2010c) for details.

^g To convert acres to km², multiply by 0.004047.

^h See BLM (2010b) for details.

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

1 The Millers SEZ represents one of the more complex cases because of its potential to
2 generate a large amount of solar power. On the basis of its size, the assumption of a minimum of
3 5 acres (0.02 km²) of land required per MW, and the assumption of a maximum of 80% of the
4 land area developed, the Millers SEZ is estimated to have the potential to generate 2,645 MW of
5 marketable solar power at full build-out.
6
7

8 **11.7.23.1 Identification and Characterization of Load Areas** 9

10 The primary candidates for Millers SEZ load areas are the major surrounding cities.
11 Figure 11.7.23.1-1 shows the possible load areas for the Millers SEZ and the estimated portion of
12 their market that could be served by solar generation. Possible load areas for the Millers SEZ
13 include Phoenix and Tucson, Arizona; Salt Lake City, Utah; Las Vegas and Reno, Nevada; and
14 San Diego, Los Angeles, San Jose, San Francisco, Oakland, and Sacramento, California.
15

16 The two load area groupings examined for the Millers SEZ are as follows:
17

- 18 1. Los Angeles, California; and
- 19 2. Reno, Nevada; Sacramento, Oakland, and San Francisco, California; and
20 Las Vegas, Nevada.
21
22

23 Figure 11.7.23.1-2 shows the most economically viable transmission scheme for the
24 Millers SEZ (transmission scheme 1), and Figure 11.7.23.1-3 shows an alternative transmission
25 scheme (transmission scheme 2) that represents a logical choice should transmission scheme 1 be
26 infeasible. As described in Appendix G, the alternative shown in transmission scheme 2
27 represents the optimum choice if one or more of the primary linkages in transmission scheme 1
28 are excluded from consideration. The groups provide for linking loads along alternative routes so
29 that the SEZ's output of 2,645 MW could be fully allocated.
30

31 Table 11.7.23.1-1 summarizes and groups the load areas according to their associated
32 transmission scheme and provides details on how the megawatt load for each area was estimated.
33
34

35 **11.7.23.2 Findings for the DLT Analysis** 36

37 The DLT analysis approach assumes that the Millers SEZ will require all new
38 construction for transmission lines (i.e., dedicated lines) and substations. The new transmission
39 lines(s) would directly convey the 2,645-MW output of the Millers SEZ to the prospective load
40 areas for each possible transmission scheme. The approach also assumes that all existing
41 transmission lines in the WECC region are saturated and have little or no available capacity to
42 accommodate the SEZ's output throughout the entire 10-year study horizon.
43

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



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

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

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

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



1
2 **FIGURE 11.7.23.1-2 Transmission Scheme 1 for the Proposed Millers SEZ**
3 **(Source for background map: Platts 2011)**
4
5

6 has seven segments. The first segment extends 30 mi (48 km) to the southwest from the SEZ to
7 the first switching station. The second segment runs to Reno (213 MW) over a distance of about
8 186 mi (299 km). This segment would require a double-circuit 500-kV (2-500 kV) bundle of
9 three (Bof3) conductors transmission line design. The third segment runs about 104 mi (167 km)
10 west from Reno to a switching station located just north of the Sacramento area, while the fourth
11 segment extends from the switching station south about 23 mi (37 km) to Sacramento
12 (1,075 MW). The fifth segment traverses a distance of about 98 mi (158 km) and links the
13 Sacramento switching station to Oakland. The sixth line crosses a 12-mi (19-km) body of water
14 via an existing bridge to serve loads in San Francisco. The seventh and final segment connects
15 the first switching station near the SEZ to Las Vegas over a distance of about 200 mi (322 km).
16

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



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

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

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

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

^b The load area represents the city named.

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

7

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

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

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

^b The load area represents the city named.

^c From Table 11.7.23.1-1.

^d To convert mi to km, multiply by 1.6093.

3
 4
 5 a switching substation is assumed to be constructed at the appropriate junction. In general,
 6 switching stations carry no local load but are assumed to be equipped with switching gears
 7 (e.g., circuit breakers and connecting switches) to reroute power as well as, in some cases, with
 8 additional equipment to regulate voltage.
 9

10 Table 11.7.23.2-2 provides an estimate of the total land area disturbed for construction
 11 of new transmission facilities under each of the schemes evaluated. The most favorable
 12 transmission scheme with respect to minimizing costs and the area disturbed would be scheme 1,
 13 which would serve Los Angeles. This scheme is estimated to potentially disturb about
 14 7,982 acres (32.3 km²) of land. The less favorable transmission scheme with respect to
 15 minimizing costs and the area disturbed would be scheme 2, which serves multiple load areas
 16 in California and Las Vegas. For this scheme, the construction of new transmission lines and
 17 substations is estimated to disturb a land area on the order of 14,924 acres (60.4 km²).
 18

19 Table 11.7.23.2-3 shows the estimated NPV of both transmission schemes and takes into
 20 account the cost of constructing the lines, the substations, and the projected revenue stream over
 21 the 10-year horizon. A positive NPV indicates that revenues more than offset investments. This
 22 calculation does not include the cost of producing electricity.
 23

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

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

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

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

b The load area represents the city named.

c To convert mi to km, multiply by 1.6093.

d To convert acres to km², multiply by 0.004047.

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

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

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

b The load area represents the city named.

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1 and serves several markets. For the assumed utilization factor of 20%, both options exhibit
 2 positive NPVs, implying varying degrees of economic viability under the current assumptions.
 3

4 Table 11.7.23.2-4 shows the effect of varying the value of the utilization factor on the
 5 NPV of the various transmission schemes. It also shows that as the utilization factor is increased,
 6 the economic viability of the lines increases. Utilization factors can be raised by allowing the
 7 new dedicated lines to market other power generation outputs in the region in addition to that of
 8 its associated SEZ.
 9

10 The findings of the DLT analysis for the proposed Millers SEZ are as follows:
 11

- 12 • Transmission scheme 1, which identifies Los Angeles as the primary
 13 market, represents the most favorable option based on NPV and land use
 14 requirements. This configuration would result in new land disturbance of
 15 about 7,982 acres (32.3 km²).
 16
- 17 • Transmission scheme 2, which represents an alternative configuration if
 18 Los Angeles is excluded, serves Reno, Sacramento, San Francisco, and
 19 Oakland. This configuration would result in new land disturbance of about
 20 14,924 acres (60.4 km²).
 21
- 22 • Other load area configurations are possible but would be less favorable than
 23 scheme 1 in terms of NPV and, in most cases, also in terms of land use
 24 requirements. If new electricity generation at the proposed Millers SEZ is not
 25 sent to either of the two markets identified above, the potential upper-bound
 26 impacts in terms of cost would be greater.
 27

28
 29 **TABLE 11.7.23.2-4 Effects of Varying the Utilization Factor on the NPV of the Transmission**
 30 **Schemes for the Proposed Millers SEZ**

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

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

^b The load area represents the city named.

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

11.7.24 Impacts of the Withdrawal

The BLM is proposing to withdraw 16,797 acres (67 km²) of public land comprising the proposed Millers SEZ from settlement, sale, location, or entry under the general land laws, including the mining laws, for a period of 20 years (see Section 2.2.2.2.4 of the Final Solar PEIS). The public lands would be withdrawn, subject to valid existing rights, from settlement, sale, location, or entry under the general land laws, including the mining laws. This means that the lands could not be appropriated, sold, or exchanged during the term of the withdrawal, and new mining claims could not be filed on the withdrawn lands. Mining claims filed prior to the segregation or withdrawal of the identified lands would take precedence over future solar energy development. The withdrawn lands would remain open to the mineral leasing, geothermal leasing, and mineral material laws, and the BLM could elect to lease the oil, gas, coal, or geothermal steam resources, or to sell common-variety mineral materials, such as sand and gravel, contained in the withdrawn lands. In addition, the BLM would retain the discretion to authorize linear and renewable energy ROWs on the withdrawn lands.

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

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

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

11 11.7.25 References

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

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1 **11.7.26 Errata for the Proposed Millers SEZ**
2

3 This section presents corrections to material presented in the Draft Solar PEIS and the
4 Supplement to the Draft. The need for these corrections was identified in several ways: through
5 comments received on the Draft Solar PEIS and the Supplement to the Draft (and verified by the
6 authors), through new information obtained by the authors subsequent to publication of the Draft
7 Solar PEIS and the Supplement to the Draft, or through additional review of the original material
8 by the authors. Table 11.7.26-1 presents corrections to the material presented in the Draft Solar
9 PEIS and the Supplement to the Draft.
10

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

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

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