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APPENDIX B:
SOLAR ENERGY ZONES DROPPED FROM FURTHER CONSIDERATION

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APPENDIX B:

SOLAR ENERGY ZONES DROPPED FROM FURTHER CONSIDERATION¹

B.1 ARIZONA

B.1.1 Bullard Wash

B.1.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic Environmental Impact Statement (PEIS)

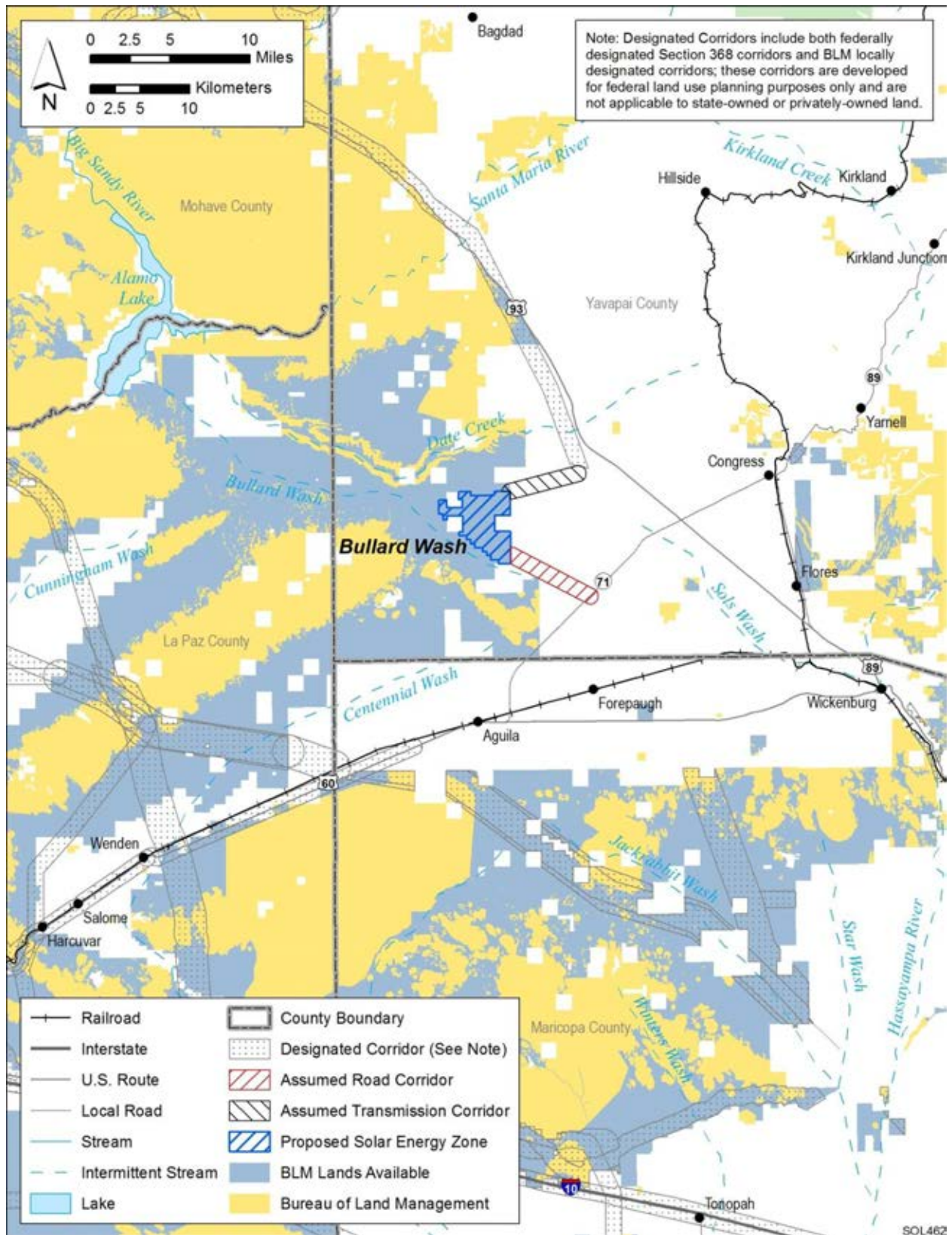
The proposed Bullard Wash solar energy zone (SEZ), as presented in the Draft Solar PEIS, had a total area of 7,239 acres (29.3 km²). It is located in Maricopa County in west-central Arizona (Figure B.1.1-1). The town of Aguila is located about 12 mi (19 km) south of the SEZ.

The Draft Solar PEIS identified a 500-kV transmission line that passes about 5 mi (8 km) northeast of the SEZ as the nearest point of connection of the SEZ to the grid. The Draft Solar PEIS also identified State Route 71, located about 5 mi (8 km) southeast of the southeastern tip of the SEZ, as the nearest major road, and assumed that a new access road would be constructed from the proposed SEZ to State Route 71 to support development.

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

- Wilderness characteristics in the Tres Alamos Wilderness Area (WA) between 3.5 and 7 mi (6 and 11 km) of the border of the SEZ and within the viewshed of the SEZ would be adversely affected.
- There would be small adverse impacts on the Pipeline Ranch and Central Arizona Ranch Company grazing allotments.
- Areas developed for solar energy production would be closed to recreational use. Inventoried off-highway vehicle routes would be closed.
- The U.S. Department of Defense expressed concern that any development in the SEZ that exceeds 250 ft (76 m) in height would interfere with military operations in three military training routes.

¹ In this appendix, acronyms are defined in each subsection to facilitate use of the subsections as individual resources.



1

2 **FIGURE B.1.1-1 Proposed Bullard Wash 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 • Over much of this SEZ, the dominant species present include Joshua tree and
9 saguaro cactus. Clearing of a large portion of the proposed SEZ could
10 primarily affect wetland, dry wash, dry wash woodland, mesquite bosque,
11 riparian, Joshua tree, and saguaro cactus communities, depending on the
12 amount of habitat disturbed. The establishment of noxious weeds could result
13 in habitat degradation.
- 14
- 15 • Potentially suitable habitat for 39 special status species occurs in the affected
16 area of the proposed SEZ; less than 1% 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
27 matter 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 residents nearest to the SEZ. Strong visual contrasts
33 could also be observed by visitors to the Tres Alamos WA. Weak to moderate
34 visual contrasts could be observed by visitors to the Arrastra Mountain WA,
35 while moderate to strong visual contrasts could be observed by travelers on
36 Joshua Forest Scenic Road.
- 37
- 38 • The potential for impacts on significant paleontological and cultural resources
39 is unknown. No surveys have been conducted in the proposed SEZ, and no
40 sites have been recorded to date. Development within the SEZ may result in
41 visual or audible disturbance to sacred areas in the nearby mountains. The
42 SEZ itself does contain plant and animal species traditionally important to the
43 Yavapai, and development in the proposed SEZ would eliminate some
44 traditionally important plants and some habitat of traditionally important
45 animals.
- 46
- 47

1 **B.1.1.2 Summary of Comments Received**
2

3 Most of the comments received from environmental groups on the proposed Bullard
4 Wash SEZ were in favor of eliminating the area as an SEZ (The Wilderness Society et al.,²
5 Western Watersheds Project, and Tonopah Area Coalition) because of concerns about the plant
6 and wildlife community present in the SEZ, potential effects on special status species in the area,
7 and its remote location. The Wilderness Society et al. were also concerned about groundwater
8 availability and the effect of water withdrawals on groundwater-dependent species, and
9 commented that development should be considered only in areas toward the southern end of the
10 SEZ where low-density plant communities exist. The Tonopah Area Coalition expressed concern
11 that the SEZ is located in an important transition zone between the Joshua Tree forest and the
12 Sonoran Desert. The Western Watersheds Project recommended that the PEIS must consider the
13 impact of noise on native and migratory wildlife species and also expressed concern for the
14 Sonoran desert tortoise that may occur in the affected area of the SEZ.
15

16 The U.S. Department of the Interior Bureau of Land Management (BLM) staff in Arizona
17 has confirmed that the eastern portion of the proposed SEZ has dense vegetative communities
18 composed of saguaro cactus, Joshua trees, creosote brush, palo verde, and desert grasses. The
19 BLM Arizona staff also noted that the combination of the dense vegetation and active washes in
20 the SEZ contribute to a sustained community of wildlife, and that the southern boundary is
21 relatively close to a major wash that would be cut off to wildlife migrating from the northern
22 mountain range if this area were developed.
23
24

25 **B.1.1.3 Rationale for Eliminating the SEZ**
26

27 On the basis of public comments received on the Draft Solar PEIS, review by the BLM,
28 and continued review of potential impacts identified in the Draft Solar PEIS, the Bullard Wash
29 SEZ will be eliminated from further consideration and will not be identified as an SEZ in
30 applicable land use plans. The potential impacts from solar development in the proposed Bullard
31 Wash SEZ were considered sufficient reason to eliminate the area from further consideration as
32 an SEZ.
33

34 Although the area will be dropped from consideration as an SEZ, the lands that composed
35 the proposed Bullard Wash SEZ will be retained as solar right-of-way variance areas, because
36 the BLM expects that individual projects could be sited in this area to avoid and/or minimize
37 impacts. Any solar development within this area in the future would require appropriate
38 environmental analysis.
39
40

² The Wilderness Society, Sonoran Institute, Sierra Club–Grand Canyon Chapter, Arizona Wilderness Coalition, Tucson Audubon Society, Friends of Ironwood Forest, Defenders of Wildlife, Sky Island Alliance, Grand Canyon Wildlands Council, Natural Resources Defense Council, Soda Mountains Wilderness Council, and Sierra Treks submitted joint comments on the proposed Arizona SEZs. Those comments are attributed to The Wilderness Society et al.

1 **B.2 CALIFORNIA**

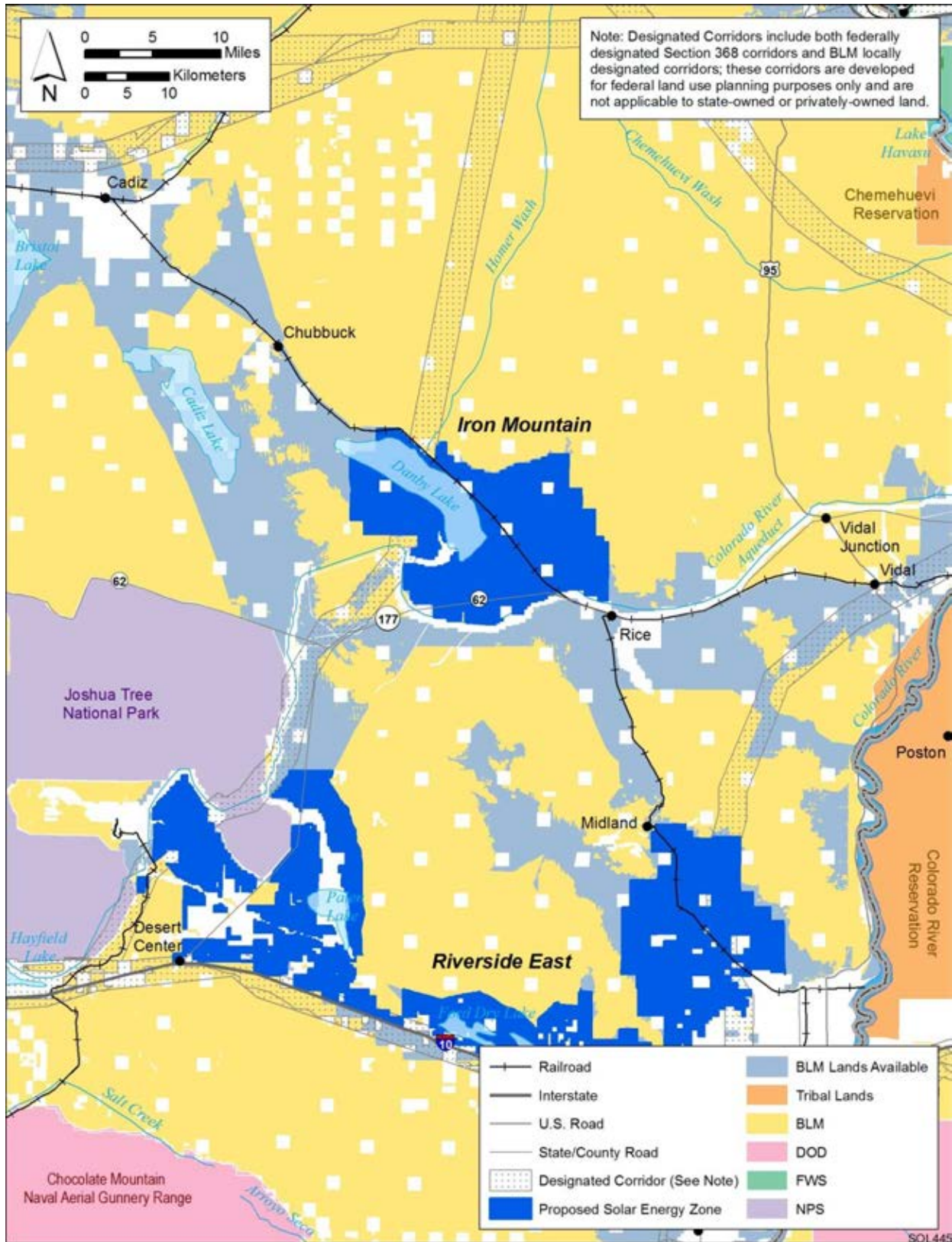
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4 **B.2.1 Iron Mountain**

5
6
7 **B.2.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Iron Mountain solar energy zone (SEZ), as presented in the Draft Solar
11 PEIS, had a total area of 106,522 acres (431 km²). It is located in San Bernardino County in
12 southeastern California, about 20 mi (32 km) from the Arizona border (Figure B.2.1-1). The SEZ
13 is in a mostly undeveloped area, with no population centers within a 20-mi (32-km) radius.
14

15 Potential environmental and other impacts identified in the Draft Solar PEIS included the
16 following:

- 17
18 • A potential hazard associated with unexploded military ordnance from past
19 military training activities was identified.
20
- 21 • Wilderness characteristics within the Turtle Mountains, Old Woman
22 Mountains, and Palen-McCoy Wilderness Areas (WAs) would be adversely
23 affected by solar development in the SEZ. Scenic resources in the Turtle
24 Mountains Area of Critical Environmental Concern would also be adversely
25 affected. Night-time lighting of solar facility development in the SEZ could
26 adversely affect the quality of the night sky environment as viewed from
27 Joshua Tree National Park (NP).
28
- 29 • Recreational users would lose the use of any portions of the SEZ developed
30 for solar energy production. Wilderness recreational use in the Turtle
31 Mountains, Old Woman Mountains, and Palen-McCoy WAs would likely be
32 adversely affected.
33
- 34 • The development of any solar energy facilities that encroach into the airspace
35 of military training routes would create safety issues and would conflict with
36 military training activities.
37
- 38 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
39 erosion by wind and runoff, sedimentation, and soil contamination) could
40 occur. Danby Lake may not be a suitable location for construction.
41
- 42 • Designation of the SEZ would affect the Danby Lake known sodium leasing
43 area in the northwest corner of the SEZ. Designation of the SEZ could make
44 sand and gravel resources unavailable.
45



1

2 **FIGURE B.2.1-1 Proposed Iron Mountain SEZ as Presented in the Draft Solar PEIS**

- 1 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
2 wet-cooling options would not be feasible. Hydrological disturbances near
3 Danby Lake could cause localized flooding and erosion, affect groundwater
4 recharge and discharge processes, and disrupt salt-mining operations. High
5 total dissolved solids values of groundwater near the Danby Lake region could
6 produce water that is nonpotable and corrosive to infrastructure.
7
- 8 • Clearing of a large portion of the proposed SEZ could primarily affect sand
9 dune, playa, desert chenopod scrub, riparian, and dry wash communities,
10 depending on the amount of habitat disturbed. The establishment of noxious
11 weeds could result in habitat degradation.
12
- 13 • Potentially suitable habitat for 43 special status species occurs in the affected
14 area of the proposed SEZ; between 1.0% and 7.5% of the potentially suitable
15 habitat for any of these species and any wildlife species occurs in the region
16 that would be directly affected by development.
17
- 18 • If aquatic biota are present in ephemeral water features (e.g., Homer Wash),
19 they could be affected by the direct removal of surface water features within
20 the construction footprint, a decline in habitat quantity and quality due to
21 water withdrawals and changes in drainage patterns, as well as increased
22 sediment and contaminant inputs associated with ground disturbance and
23 construction activities.
24
- 25 • Temporary exceedances of ambient air quality standards for particulate matter
26 at the SEZ boundaries are possible during construction. These high
27 concentrations, however, would be limited to the immediate area surrounding
28 the SEZ boundary. Modeling indicates Class I Prevention of Significant
29 Deterioration PM₁₀ (particulate matter with an aerodynamic diameter of
30 10 µm or less) increments at the nearest federal Class I area (Joshua Tree NP)
31 could be exceeded under conservative assumptions.
32
- 33 • Strong visual contrasts could be observed by visitors to the Palen-McCoy WA
34 and travelers on State Road 62 and Cadiz Road. Moderate to strong visual
35 contrasts could be observed by visitors to the Old Woman Mountains and
36 Turtle Mountains WAs. Moderate visual contrasts could also be observed by
37 visitors to the Rice Valley WA, while weak to moderate visual contrasts could
38 be observed by visitors to the Joshua Tree NP and Joshua Tree WA.
39
- 40 • Noise levels at the nearest residences would be higher during operations than
41 the San Bernardino County and U.S. Environmental Protection Agency
42 guidance levels if concentrating solar power facilities with energy storage
43 technologies (which could extend the daily operational time by 6 hours or
44 more) were used at the SEZ.
45

- 1 • The potential for impacts on significant paleontological and cultural resources
2 is largely unknown. The area around Danby Lake within the SEZ has a high
3 potential to contain paleontological deposits and would require a
4 paleontological survey. Numerous prehistoric and Native American sites and
5 trails are potentially located within the SEZ and could be affected by solar
6 energy development. It is possible that there will be Native American
7 concerns about the Salt Song Trail, which passes just west of the proposed
8 SEZ.
9

11 **B.2.1.2 Summary of Comments Received**

12

13 Many comments on the proposed Iron Mountain SEZ were received; most were in favor
14 of eliminating the area as an SEZ because it contains environmentally and culturally sensitive
15 areas (California Public Utilities Commission, Center for Biological Diversity, Big Pine
16 Paiute of the Owens Valley, California Desert Coalition, Natural Resources Defense Council
17 [NRDC] et al.,³ Western Watersheds Project, National Parks Conservation Association, The
18 Nature Conservancy, California Native Plant Society (CNPS), San Manuel Band of Mission
19 Indians, Sierra Club, and Defenders of Wildlife). The Big Pine Paiute of the Owens Valley and
20 the San Manuel Band of Mission Indians were concerned about the direct impacts on significant
21 cultural resources. Many commentors opposed the Iron Mountain SEZ because of its proximity
22 to Joshua Tree NP. The NRDC et al. commented that the SEZ was inconsistent with criteria
23 developed by the conservation community for siting solar facilities in the desert. It was
24 concerned that the SEZ includes 10,007 acres (40 km²) of Citizen Proposed Wilderness, that
25 development of the SEZ would preclude opportunities to connect Joshua Tree NP with the
26 Mojave Preserve, and that the SEZ is located within a U.S. Department of the Interior Bureau
27 of Land Management (BLM)-designated multi-habitat management area. The NRDC et al.
28 mentioned that the SEZ was located in an essential habitat-connectivity linkage area for desert
29 bighorn sheep populations.
30

31 The Metropolitan Water District of Southern California was concerned about the possible
32 impacts on its facilities and recommended that the BLM also consider cumulative effects of solar
33 energy development on the water district's facilities. The Western Watersheds Project cited
34 multiple conflicts with wildlife and habitat resources and argued that the area provides desert
35 tortoise connectivity between the Northern and Eastern Colorado Desert Tortoise Recovery Units
36 and contains habitat for rare plants. The National Parks Conservation Association was opposed
37 to the SEZ because it would require significant infrastructure, would have adverse impacts on
38 night sky resources in Joshua Tree NP, and would inhibit wildlife movements among the Mojave
39 National Preserve, several wilderness areas to the south of the SEZ, and Joshua Tree NP.
40

³ The Natural Resources Defense Council, Audubon Society, California Native Plant Society, California Wilderness Coalition, Californians for Western Wilderness, Defenders of Wildlife, the National Parks Conservation Association, Point Reyes Bird Observatory Conservation Science, Sierra Club, The Wilderness Society, and The Wildlands Conservancy submitted joint comments on the proposed California SEZs. Those comments are attributed to NRDC et al.

1 The California Energy Commission (CEC) commented that the SEZ is not ideal for solar
2 energy development but did not recommend eliminating the SEZ. The CEC recommended that
3 the BLM make development of the Iron Mountain SEZ a low priority because of its remote
4 location and high-value Mojave desert tortoise habitat corridors. The CNPS argued against
5 designation of Iron Mountain as an SEZ because it contains ecologically important vegetation
6 communities and because numerous prehistoric and historic sites have been identified within the
7 SEZs. Like other environmental groups, the Sierra Club commented that the development of the
8 SEZ would have adverse impacts on desert tortoise and sensitive biological, cultural, and visual
9 resources. Last, the Citizens for the Chuckwalla Valley were concerned about possible
10 environmental justice impacts on people in the nearby communities of Rice, Blythe, and Desert
11 Center.

12 13 14 **B.2.1.3 Rationale for Eliminating the SEZ**

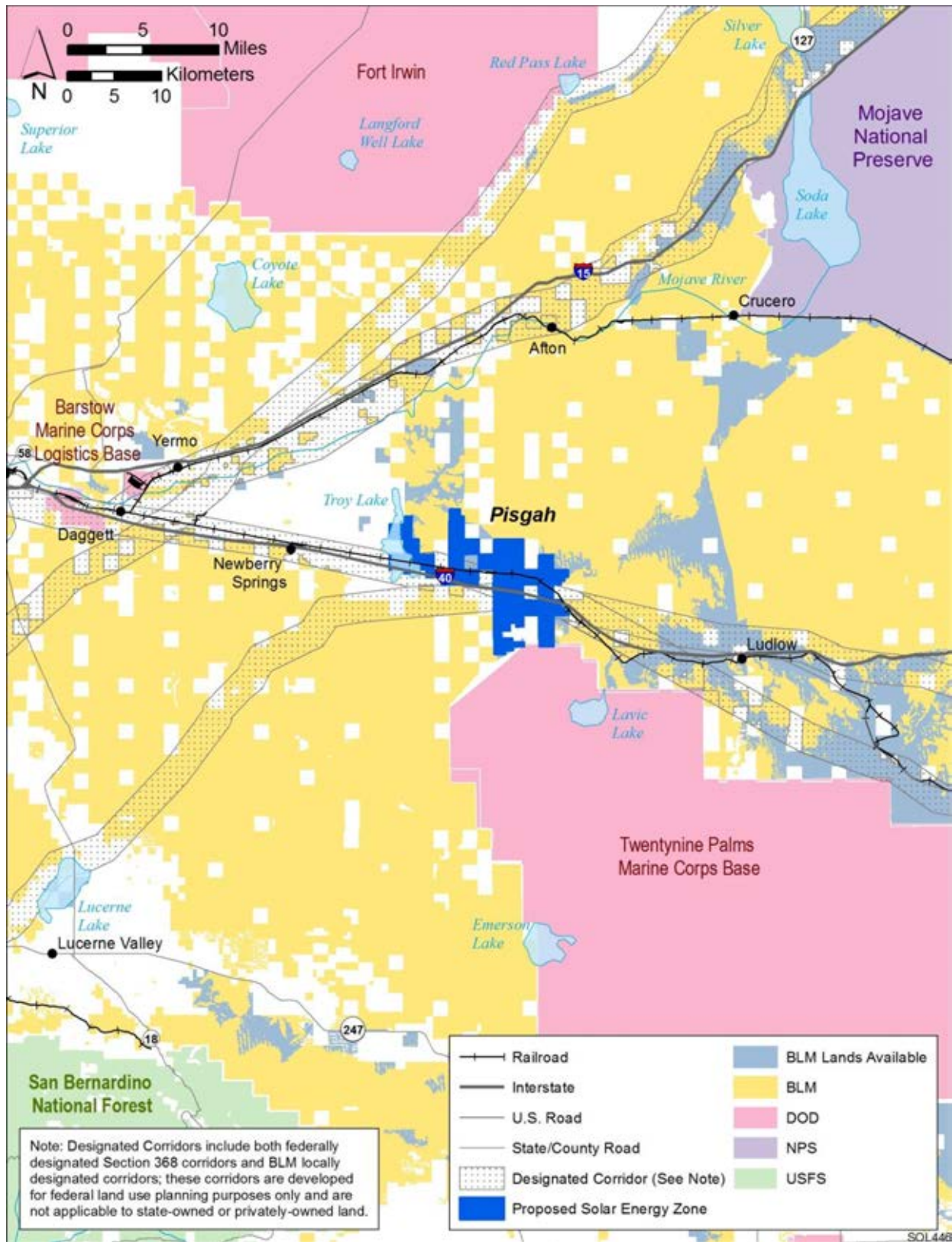
15
16 On the basis of public comments received on the Draft Solar PEIS, review by the BLM,
17 and continued review of potential impacts identified in the Draft Solar PEIS, the Iron Mountain
18 SEZ will be eliminated from further consideration and will not be identified as an SEZ in
19 applicable land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

22
23 Because of the extensive potential impacts from solar development in the proposed Iron
24 Mountain SEZ, the lands that composed the SEZ as presented in the Draft Solar PEIS will be
25 considered solar right-of-way exclusion areas; that is, applications for solar development on
26 these lands will not be accepted by the BLM.

27 28 29 **B.2.2 Pisgah**

30 31 32 **B.2.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic 33 Environmental Impact Statement (PEIS)**

34
35 The proposed Pisgah solar energy zone (SEZ), as presented in the Draft Solar PEIS, had a
36 total area of 23,950 acres (97 km²). It is located in San Bernardino County in southeastern
37 California (Figure B.2.2-1). The City of Barstow is located about 25 mi (40 km) to the west of
38 the SEZ. There are a few residences close to the northwestern and southwestern boundaries of
39 the proposed SEZ, but the nearest population center is Newberry Springs, which is located about
40 6 mi (10 km) to the west.



1

2 **FIGURE B.2.2-1 Proposed Pisgah SEZ as Presented in the Draft Solar PEIS**

1 A designated Section 368 energy corridor⁴ occupies a portion of the SEZ and could limit
2 development in the SEZ if the corridor were developed, because solar facilities cannot be
3 constructed under transmission lines or over pipelines. Further, the Draft Solar PEIS discussion
4 of impacts of solar energy development in the SEZ acknowledged that solar facility development
5 on both sides of the corridor would limit the ability to add future corridor capacity.
6

7 Potential environmental and other impacts identified in the Draft Solar PEIS included the
8 following:
9

- 10 • Wilderness characteristics in 20% of the Cady Mountain Wilderness Study
11 Area (WSA) and 27% of the Rodman Mountain Wilderness Area (WA) would
12 be adversely affected by solar development in the SEZ. The Ord-Rodman
13 Desert Wildlife Management Area and Pisgah Area of Critical Environmental
14 Concern (ACEC) abut portions of the Pisgah SEZ and would be vulnerable to
15 increased human traffic induced by the presence of the SEZ. The Rodman
16 Mountains Cultural Area would also be vulnerable to increased traffic.
17
- 18 • The presence of solar development in the SEZ likely would adversely affect
19 recreational use of the Cady Mountains WSA and Rodman Mountains WA.
20 Opportunities for primitive recreation surrounding the SEZ would be reduced.
21
- 22 • The development of any solar energy facilities that encroach into the airspace
23 of military training routes could conflict with military training activities and
24 create a safety concern.
25
- 26 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
27 erosion by wind and runoff, sedimentation, and soil contamination) could
28 occur. The Pisgah lava field may not be a suitable location for construction.
29
- 30 • Currently, 103 mining claims occur within the SEZ; most of these are in the
31 area south of Interstate-40, where there has been a mining operation for many
32 years. These mining claims represent a prior existing right that, if valid, likely
33 would preclude solar energy development as long as they are in place.
34
- 35 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
36 wet-cooling options would not be feasible.
37

⁴ Section 368 of the Energy Policy Act of 2005 (Public Law 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 U.S. Department of the Interior Bureau of Land Management (BLM), U.S. Department of Energy (DOE), U.S. Forest Service (USFS), and U.S. Department of Defense 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 Records of Decision to amend their respective land use plans to designate numerous corridors, often referred to as Section 368 corridors.

- 1 • Clearing of a large portion of the proposed SEZ could primarily affect sand
2 dune, playa, desert chenopod scrub, and dry wash communities, depending on
3 the amount of habitat disturbed. The establishment of noxious weeds could
4 result in habitat degradation.
5
- 6 • Potentially suitable habitat for 54 special status species occurs in the affected
7 area of the proposed SEZ; less than 3% of the potentially suitable habitat for
8 any of these species and any wildlife species occurs in the region that would
9 be directly affected by development.
10
- 11 • If aquatic biota are present, they could be affected by the direct removal of
12 surface water features within the construction footprint, a decline in habitat
13 quantity and quality due to water withdrawals and changes in drainage
14 patterns, as well as increased sediment and contaminant inputs associated with
15 ground disturbance and construction activities.
16
- 17 • Temporary exceedances of ambient air quality standards for particulate matter
18 at the SEZ boundaries are possible during construction. These high
19 concentrations, however, would be limited to the immediate area surrounding
20 the SEZ boundary.
21
- 22 • The SEZ is located within the California Desert Conservation Area (CDCA),
23 and substantial, non-mitigable visual impacts would occur within the CDCA
24 in the SEZ and surrounding lands. Strong visual contrasts could be observed
25 by travelers on Historic Route 66 and the Burlington Northern Santa Fe
26 Amtrak passenger rail line. Moderate to strong visual contrasts could be
27 observed by visitors to the Rodman Mountains and Cady Mountains WAs.
28 Moderate visual contrasts could also be observed from the community of
29 Newberry Springs, while weak to moderate visual contrasts could be observed
30 by visitors to the Newberry Mountains WA.
31
- 32 • During construction, noise levels at the nearest residences would be higher
33 than the San Bernardino County regulation and the U.S. Environmental
34 Protection Agency (EPA) guidance levels. During operations, noise levels at
35 the nearest residences would be above San Bernardino County and EPA
36 guidance levels if concentrating solar power technologies with energy storage
37 technologies (which could extend the daily operational time by 6 hours or
38 more) were used at the SEZ. Noise levels at the nearest residence would be
39 slightly higher than the San Bernardino County regulation if the SEZ were
40 developed with dish engine facilities.
41
- 42 • The potential for impacts on significant paleontological and cultural resources
43 is relatively unknown, but could be high in some areas. Numerous prehistoric
44 and Native American sites and trails are potentially located within the SEZ
45 and could be affected by solar energy development. The SEZ includes plant
46 species and could contain game species important to Native Americans.

1 Ground-disturbing activities have the potential for adversely affecting these
2 resources, along with archaeological resources and burials important to Native
3 Americans.

- 4
- 5 • Both minority and low-income populations occur within a 50-mi (80-km)
6 radius of the proposed SEZ boundary; thus adverse impacts of solar
7 development could disproportionately affect minority and low-income
8 populations.
- 9

10

11 **B.2.2.2 Summary of Comments Received**

12

13 Many comments were received on the proposed Pisgah SEZ; most were in favor of
14 eliminating the area as an SEZ because it contains environmentally and culturally sensitive areas
15 (Center for Biological Diversity, Big Pine Paiute of the Owens Valley, California Desert
16 Coalition, Natural Resources Defense Council [NRDC] et al.,⁵ Western Watersheds Project
17 [WWP], The Nature Conservancy, California Native Plant Society [CNPS], San Manuel Band
18 of Mission Indians, Sierra Club, and Defenders of Wildlife). Pacific Gas and Electric Company
19 recommended changing the SEZ boundaries to eliminate inappropriate areas from consideration.
20 The Big Pine Paiute of the Owens Valley, the San Manuel Band of Mission Indians, and the
21 NRDC et al. were concerned about the direct impacts on significant cultural resources. The
22 NRDC et al. commented that the SEZ is incompatible with the BLM's conservation
23 responsibilities under the Endangered Species Act, Federal Land Policy and Management Act,
24 and its own wildlife resource manuals. The NRDC et al. mentioned that the SEZ is located in an
25 area of essential habitat connectivity and recommended that cumulative impacts on the value of
26 the area as a wildlife corridor be addressed.

27

28 The Metropolitan Water District of Southern California was concerned about
29 socioeconomic impacts, including any financial or ratepayer impacts from development of the
30 SEZ, and recommended that the BLM also consider cumulative effects of solar energy
31 development on the water district's facilities. WWP cited multiple conflicts with wildlife and
32 habitat resources and argued that there would be impacts on bighorn sheep movement. WWP
33 was also concerned that the area provides the only connectivity between tortoises in the Southern
34 Mojave and Central Mojave populations, and development of the SEZ would affect connectivity
35 between the West Mojave recovery unit and the eastern desert tortoise recovery units. The area is
36 also adjacent to two ACECs and a WSA. The California Public Utilities Commission and other
37 groups expressed concern for desert tortoise habitat located within and near the SEZ.

38

⁵ The NRDC, Audubon Society, California Native Plant Society, California Wilderness Coalition, Californians for Western Wilderness, Defenders of Wildlife, the National Parks Conservation Association, Point Reyes Bird Observatory Conservation Science, Sierra Club, The Wilderness Society, and The Wildlands Conservancy submitted joint comments on the proposed California SEZs. Those comments are attributed to NRDC et al.

1 The Wilderness Society et al.⁶ expressed concern for the golden eagle population near the
2 SEZ and indicated that development in the proposed Pisgah SEZ would constitute a “take” of
3 golden eagles, because it would disturb and destroy the foraging habitat of nearby golden eagles.
4 The CNPS argued against designation of Iron Mountain as an SEZ because it is regionally
5 significant in sustaining biological diversity and because development in the SEZ could result in
6 loss of habitat and displacement of many species, including sensitive species. Like other
7 environmental groups, the Sierra Club commented that the development of the SEZ would have
8 adverse impacts on desert tortoise and sensitive biological, cultural, and visual resources.
9 San Bernardino County recommended that only dry-cooling technologies be allowed.

12 **B.2.2.3 Rationale for Eliminating the SEZ**

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

20 Although the area will be dropped from consideration as an SEZ, most of the lands that
21 composed the proposed Pisgah SEZ will be retained as solar right-of-way variance areas,
22 because the BLM expects that individual projects could be sited in this area to avoid and/or
23 minimize impacts. Any solar development within this area in the future would require
24 appropriate environmental analysis.

26 An exception to the above will be made for specific lands identified during the
27 environmental review process for the approved Calico Solar Project (CACA 49537), which
28 comprises more than 4,600 acres (19 km²) within the SEZ. Through the Calico environmental
29 review process, some parts of the project area were identified as areas where solar development
30 should be avoided; these areas will now be identified as solar right-of-way exclusion areas, that
31 is, areas where applications for solar development will not be accepted by the BLM.

6 The Wilderness Society, Natural Resources Defense Council, Defenders of Wildlife, Sonoran Institute, Wild Utah Project, New Mexico Wilderness Alliance, Tucson Audubon Society, Audubon Wyoming, Friends of Ironwood Forest, Arizona Wilderness Coalition, Southern Utah Wilderness Alliance, California Wilderness Coalition, Nevada Conservation League & Education Fund, Nevada Wilderness Project, Audubon New Mexico, Soda Mountain Wilderness Council, Center for Native Ecosystems, Western Environmental Law Center, Californians for Western Wilderness, Gila Resources Information Project, Gila Conservation Coalition, National Audubon Society, San Luis Valley Ecosystem Council and the Sierra Club submitted joint comments on the Draft Solar PEIS. Those comments are attributed to The Wilderness Society et al.

1 **B.3 NEVADA**

2
3
4 **B.3.1 Delamar Valley**

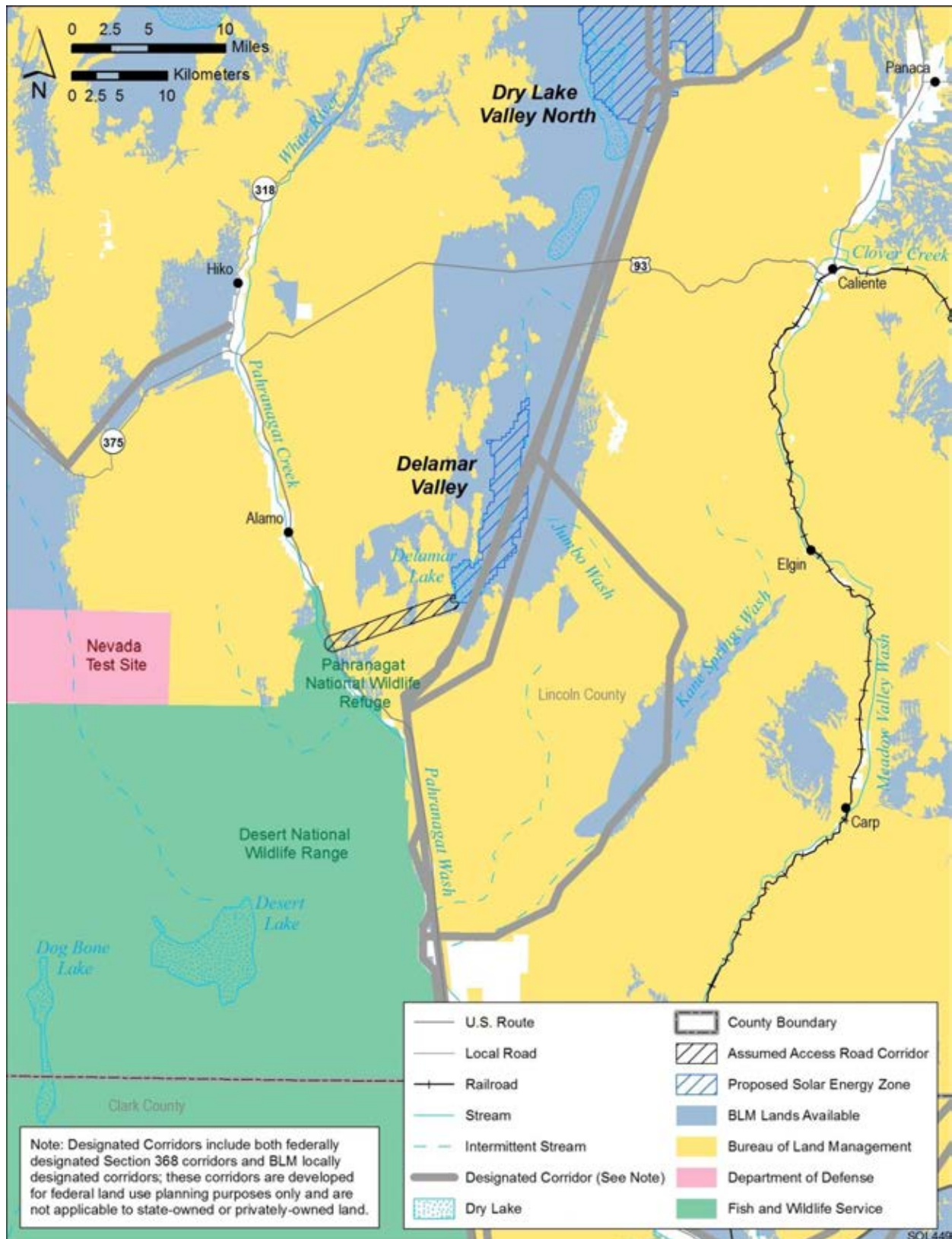
5
6
7 **B.3.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Delamar Valley solar energy zone (SEZ), as presented in the Draft Solar
11 PEIS, had a total area of 16,552 acres (67 km²). It is located in Lincoln County in southeastern
12 Nevada (Figure B.3.1-1). The largest nearby town is the city of Alamo, Nevada, about 11 mi
13 (18 km) west of the SEZ.
14

15 The Draft Solar PEIS identified U.S. 93, about 9 mi (14.5 km) west of the SEZ, as the
16 nearest major road and assumed that a new access road would be constructed from there to the
17 proposed SEZ to support development (see Figure B.3.1-1). The Draft Solar PEIS identified a
18 locally designated transmission corridor that occupies about 2,919 acres (12 km²), or 22%, of the
19 eastern portion of the proposed Delamar Valley SEZ, and a right-of-way (ROW) application
20 from the Southern Nevada Water Authority (SNWA) for a pipeline that would pass through the
21 middle of the proposed SEZ. Both of these ROWs could limit development in the SEZ because
22 solar facilities cannot be constructed under transmission lines or over pipelines. Further, the
23 Draft Solar PEIS discussion of impacts of solar energy development in the SEZ acknowledged
24 that solar facility development on both sides of the corridor would limit the ability to add future
25 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–west travel across the
31 valley could be cut off, requiring extensive detours for public land users.
32
- 33 • Visual impacts of solar energy development would have the potential to affect
34 wilderness characteristics of the Delamar Mountains and South Pahroc
35 Wilderness Areas (WAs). Night-time lighting of solar development could
36 adversely affect the quality of the night sky environment in adjacent specially
37 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 would be lost.
42
- 43 • Because the SEZ includes numerous roads and trails, construction of solar
44 energy facilities could cause a major impact on existing recreation travel.
45



1

2 **FIGURE B.3.1-1 Proposed Delamar Valley SEZ as Presented in the Draft Solar PEIS**

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

1 Special Recreation Management Area (SRMA), and the Pahrangat SRMA.
2 Weak to strong visual contrasts could be observed by visitors to the South
3 Pahroc Range WA.
4

- 5 • Few, if any, impacts on significant paleontological resources are likely to
6 occur in 73% of the proposed SEZ, while the potential in the remaining 27%
7 of the SEZ is unknown. The SEZ has a high potential for containing
8 prehistoric sites, especially in the dry lake area at the southern end of the SEZ;
9 thus, direct impacts on significant cultural resources could occur in the
10 proposed SEZ. Indirect impacts on cultural resources outside of the SEZ are
11 possible in rock shelter and petroglyph sites immediately west of the SEZ.
12 Visual impacts on areas of traditional cultural importance could occur.
13
- 14 • Both minority and low-income populations occur within a 50-mi (80-km)
15 radius of the proposed SEZ boundary; thus adverse impacts of solar
16 development could disproportionately affect minority and low-income
17 populations.
18
19

20 **B.3.1.2 Summary of Comments Received**

21

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

27 The Wilderness Society et al.⁷ and Nevada Wilderness Project suggested removing the
28 southern end of the SEZ because the sensitive resources in the playa lake make it inappropriate
29 for solar development. The DoD was concerned that any development in the SEZ would have an
30 immediate adverse effect on current and future DoD operations on the NTTR. Lincoln County
31 opposed designation of Delamar Valley as an SEZ because of its potential adverse impacts on
32 water resources, soil resources, vegetation resources, visual resources, recreation, livestock
33 grazing, wildlife, and county socioeconomics. If, however, the SEZ were to be carried forward,
34 Lincoln County recommended that only photovoltaic technologies be considered because of the
35 lack of groundwater resources in the area.
36

37 The Nevada Wilderness Project recommended avoiding Joshua tree habitat along the
38 northern portion of the SEZ. The Western Watersheds Project and The Wilderness Society et al.
39 recommended eliminating Delamar Valley as an SEZ because of the region's limited
40 groundwater availability and because the groundwater basin is fully appropriated. The SNWA
41 expressed concern over impacts on ROWs for the Groundwater Development Project.

⁷ 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 An ethnographic study for the Delamar Valley SEZ area was recently conducted and is
2 summarized in the text box below. The agencies value the information shared by the Tribes
3 during the ethnographic study and will consider their input in striving to minimize the impacts of
4 solar development. The completed ethnographic study will be available in its entirety on the
5 Solar PEIS Web site (<http://solareis.anl.gov>).

Tribal Perspectives on the Significance of Delamar Valley SEZ

The lands under consideration in the Delamar Valley SEZ region traditionally were occupied and used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. Tribes specifically involved in the field consultations that are summarized here are the Moapa Band of Paiute Indians and the Paiute Indian Tribe of Utah, who represent the cultural interests of the Southern Paiute peoples. These Numic-speaking people have gone on record in past projects and continue to stipulate here that they are the American Indian people responsible for the cultural resources (natural and man-made) in this study area because their ancestors were placed here by the Creator and have lived in these lands since time immemorial, maintaining and protecting these places, plants, animals, water sources, and cultural signs of their occupation.

These Numic-speaking peoples further stipulate that because they have lived in these lands since the end of the Pleistocene and throughout the Holocene, or approximately 15,000 years, they deeply understand the dramatic shifts in climate and ecology that have occurred over these millennia. Indian lifeways were dramatically influenced by these natural shifts, but certain religious and ceremonial practices persisted unchanged. The involved American Indian Tribal governments and their appointed cultural representatives have participated in this PEIS in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, water, geological resources, and places of historic encounters that exist in these lands.

During the ethnographic field sessions, Tribal representatives identified the Delamar Valley region as being part of a large ceremonial landscape that contains many traditional-use features like hot springs, volcanic places, and important plants and animals. The Delamar Valley SEZ region extends beyond the proposed boundaries of the SEZ and includes the cultural resources in the surrounding landscape. The SEZ study area includes plant communities located within the SEZ boundary, geological features and water sources located just outside the SEZ, and trail systems that people from neighboring or distant communities used to pass through the SEZ study area to reach nearby medicinal and ceremonial areas.

Regional topography is accentuated by high snow-capped and forested mountains whose rain and snow drain into and periodically fill the playa. The combination of water, expansive mountain vistas, white mud earth, and a dark black volcanic ridge produces a landscape that, according to the Indian people, identifies this place as a source of *Puha* (power or energy) and powerful natural and spiritual resources. Places that contain the presence of volcanic activity are considered sacred and powerful. Southern Paiute people believe that volcanic events are moments when *Puha* deep inside the Earth is brought to the surface as a way for the land to renew itself and to distribute *Puha* across the landscape.

The power of the topography was also enhanced by the presence of a steep-sided knoll located in the playa just east of the volcanic ridge, which was labeled as Turtle Butte by Indian representatives. Turtle Butte was also identified as a location for vision questing. Vision-questing destinations are selectively marked, and offerings and prayers are left for placation and gratitude. Both remain to indicate the meaning of the place as it was defined at Creation.

8

Tribal Perspectives on the Significance of Delamar Valley SEZ (Cont.)

The Delamar seasonal playa lake area has been used by Indian people for thousands of years. This is evident, in part, by the large number of heavily weathered and patinated rock peckings located at three places along the eastern side of the volcanic ridge that extends into the seasonal playa lake. A variety of images are found. These include Ocean Woman's net. Ocean Woman is linked to the Creation of all humans and peckings of her net would occur only at ceremonial places. Images of powerful water babies can also be seen. Another ceremony-related pecking is the Knotted String (Stoffle et al. 2004). These occur at places where medicine men or pilgrims travel. Images of The Twins occur as well. They represent the Salt Song sisters who participated in the formation of the trail to the afterlife, which is traveled via about a thousand miles of spiritual and physical paths and places.

The current study was not intended to provide a full interpretation of all the cultural resources associated with the Delamar Valley SEZ region; however, Indian interpretations do present a possible explanation of the traditional functions of the three rock pecking places along the volcanic ridge. It is important to note at the outset that the great majority of the volcanic ridge contains no peckings at all. Thus the three pecking areas discussed here were chosen for a specific purpose, and each had a different function. At the tip of what is called Point of Rocks, the pecking panels were identified as providing directions to travelers either passing through the area or using the area as a destination. For either type of travel it was a point of prayer. The second pecking area centered on the large boulders had a few peckings and an abundance of grinding slicks. It was interpreted as a place where people stayed and prepared plant or paint materials for ceremonies. It may have been a place of prayer before people left for a destination. The third and very large pecking area has what amounts to hundreds of peckings of various sizes, styles, and locations. These peckings are delineated from side to side and from top to bottom of the ridge and only occur together. The area was for ceremonies that could have been accomplished on the ridge at this location or were for preparation of an event that could have occurred elsewhere such as the steep-sided butte in the seasonal lake.

Finally, during multiple field visits, Tribal representatives identified 19 traditional use plants and 42 traditional use animals within the SEZ study area. The presence of these plants and animals adds to the study area's cultural importance because they are associated with medicine, ceremony, and Creation.

B.3.1.3 Rationale for Eliminating the SEZ

On the basis of public comments received on the Draft Solar PEIS, review by the U.S. Department of the Interior Bureau of Land Management (BLM), and continued review of potential impacts identified in the Draft Solar PEIS, the Delamar Valley SEZ will be eliminated from further consideration and will not be identified as an SEZ in applicable land use plans. The potential impacts from solar development in the proposed Delamar Valley SEZ were considered sufficient reason to eliminate the area from further consideration as an SEZ.

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

1 **B.3.2 East Mormon Mountain**

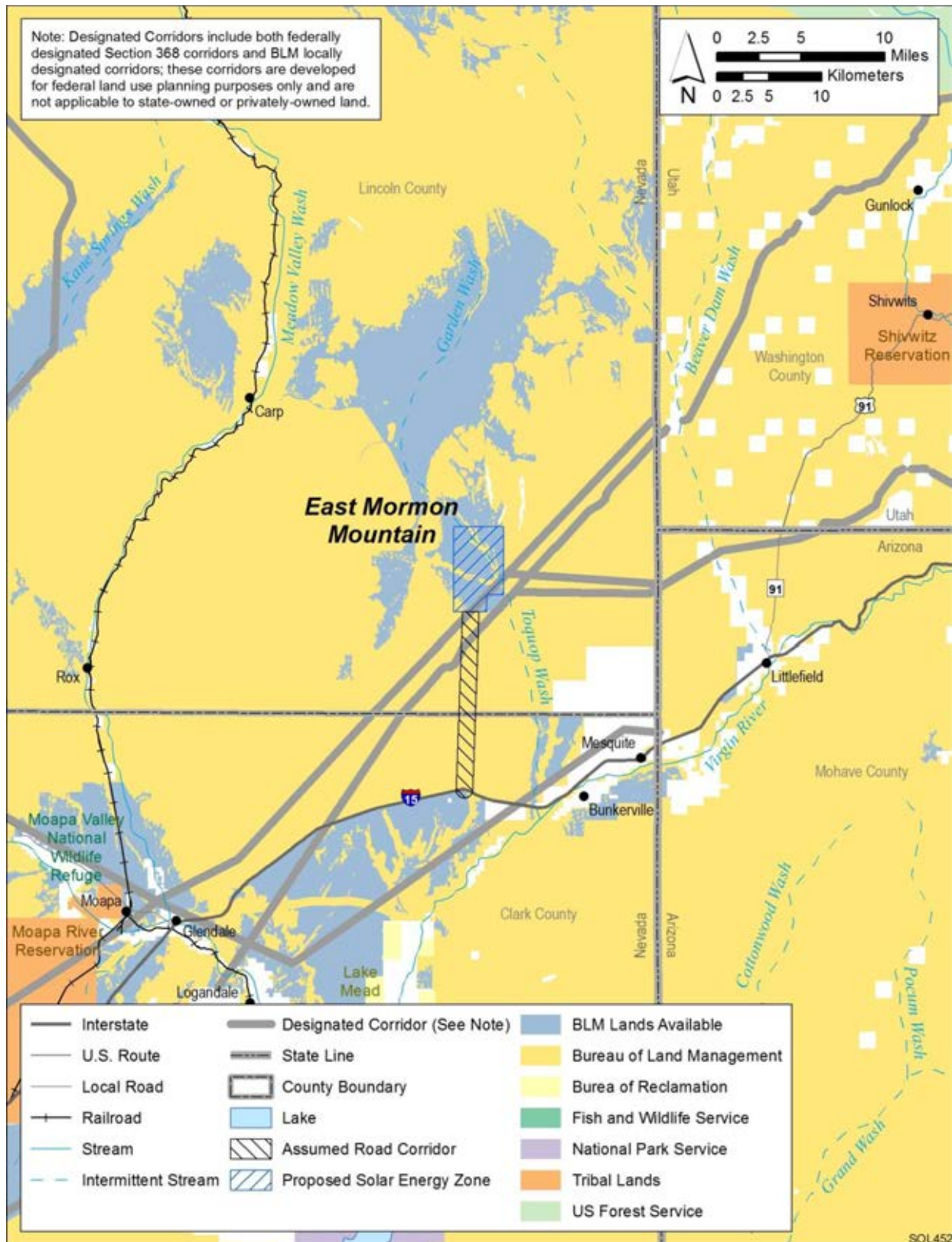
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3
4 **B.3.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
5 **Environmental Impact Statement (PEIS)**
6

7 The proposed East Mormon Mountain solar energy zone (SEZ), as presented in the Draft
8 Solar PEIS, had a total area of 8,968 acres (36 km²). It is located in Lincoln County in southern
9 Nevada (Figure B.3.2-1). The nearest towns are the cities of Mesquite and Bunkerville,
10 approximately 13 mi (21 km) southeast and south-southeast of the SEZ, respectively.
11

12 The Draft Solar PEIS also identified Interstate-15, about 11 mi (18 km) southeast of the
13 SEZ, as the nearest major road and assumed that a new access road would be constructed from
14 the proposed SEZ to I-15 to support development.
15

16 Potential environmental and other impacts identified in the Draft Solar PEIS included the
17 following:
18

- 19 • Solar development could sever existing roads and trails that access the SEZ
20 and make it difficult to access undeveloped public lands within and to the
21 west of the SEZ.
22
- 23 • Visual impacts of solar energy development would have the potential to affect
24 wilderness characteristics of the Mormon Mountains Wilderness Area (WA).
25 A new access road would pass through the Mormon Mountain Area of Critical
26 Environmental Concern (ACEC), causing fragmentation of the ACEC.
27
- 28 • If full solar development would occur in the SEZ, the Gourd Springs
29 allotment would be reduced in area by about 9.1%. Because the SEZ would
30 occupy the best grazing land in the allotment, it is likely that the grazing
31 operation would become economically infeasible and all 3,458 animal unit
32 months currently authorized would be lost.
33
- 34 • There may be some loss of wilderness recreational opportunities in up to 9.7%
35 of the Mormon Mountains WA.
36
- 37 • The U.S. Department of Defense (DoD) indicated that solar technologies with
38 structures higher than 200 ft (61 m) would intrude into military airspace and
39 would present safety concerns for military aircraft.
40
- 41 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
42 erosion by wind and runoff, sedimentation, and soil contamination) could
43 occur.
44
- 45 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
46 wet-cooling options would not be feasible.



1

2 **FIGURE B.3.2-1 Proposed East Mormon Mountain SEZ as Presented in the Draft Solar PEIS**

- 1 • Clearing of a large portion of the proposed SEZ could primarily affect playa
2 habitats, riparian habitats, desert dry washes, or other intermittently flooded
3 areas within or downgradient from solar projects, depending on the amount of
4 habitat disturbed. The establishment of noxious weeds could result in habitat
5 degradation. Deposition of fugitive dust could cause reduced productivity or
6 changes in plant community structure.
7
- 8 • Potentially suitable habitat for 32 special status species occurs in the affected
9 area of the proposed SEZ; less than 1.0% of the potentially suitable habitat for
10 any of these species and any wildlife species occurs in the region that would
11 be directly affected by development.
12
- 13 • If aquatic biota are present, they could be affected by the direct removal of
14 surface water features within the construction footprint, a decline in habitat
15 quantity and quality due to water withdrawals and changes in drainage
16 patterns, as well as increased sediment and contaminant inputs associated with
17 ground disturbance and construction activities.
18
- 19 • Temporary exceedances of ambient air quality standards for particulate matter
20 at the SEZ boundaries are possible during construction. These high
21 concentrations, however, would be limited to the immediate area surrounding
22 the SEZ boundary.
23
- 24 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
25 could be observed by visitors to the Mormon Mountains WA.
26
- 27 • Few, if any, impacts on significant paleontological resources are likely to
28 occur in the proposed SEZ. Areas near Toquop Wash and South Fork have
29 considerable potential for containing significant sites; thus, direct impacts on
30 significant cultural resources could occur in the proposed SEZ. Visual impacts
31 on the Old Spanish National Historic Trail are possible, as well as visual and
32 auditory effects on nearby rock art sites. The proposed SEZ does include
33 plants and animals traditionally important to Native Americans.
34
35

36 **B.3.2.2 Summary of Comments Received**

37

38 Most of the comments received on the proposed East Mormon Mountain SEZ were in
39 favor of eliminating the area as an SEZ (N-4 State Grazing Board; Lincoln County, Nevada; and
40 Western Watersheds Project). However, the Nevada Wilderness Project and The Wilderness
41 Society et al.⁸ supported designating the area as an SEZ. Many comments expressed concern for

⁸ 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 ranching operations in the area and the effect of solar development in the proposed SEZ on
2 grazing allotments in the area.

3
4 The DoD recommended that any solar energy technologies that require structures higher
5 than 700 ft (1,127 m) above ground level receive additional analysis. Lincoln County opposed
6 designation of East Mormon Mountain as an SEZ because of its potential adverse impacts on the
7 Mormon Mesa ACEC, specially designated lands with wilderness characteristics and designated
8 by Congress, livestock grazing, recreation, DoD operating areas, sensitive soil, water and
9 vegetation resources, designated critical habitat for federally endangered species, and visual
10 resource values.

11
12 The Western Watersheds Project recommended eliminating East Mormon Mountain as an
13 SEZ, because the SEZ includes desert tortoise habitat and is immediately adjacent to the
14 Mormon Mesa Desert Wildlife Management Area (DWMA) and Beaver Dam Slope DWMA in
15 the Northeastern Mojave recovery unit. The Nature Conservancy recommended avoiding the
16 Toquop Wash, because it is a regionally important desert wash containing many of the Mojave
17 Desert ecoregionally significant plant and animal species.

18
19 An ethnographic study for the East Mormon Mountain SEZ area was recently conducted
20 and is summarized in the text box below. The agencies value the information shared by the
21 Tribes during the ethnographic study and will consider their input in striving to minimize the
22 impacts of solar development in the SEZ. The completed ethnographic study will be available in
23 its entirety on the Solar PEIS Web site (<http://solareis.anl.gov>).

Tribal Perspectives on the Significance of East Mormon Mountain SEZ

The lands under consideration in the East Mormon Mountain SEZ were traditionally occupied and used, aboriginally owned, and historically related to the Numic-speaking peoples of the Great Basin and western Colorado Plateau. People specifically involved in the Solar PEIS field consultations summarized here are from the Moapa Band of Paiute Indians who are representing the cultural interests of the Southern Paiute peoples. The Solar PEIS investigation includes areas that were studied during previous ethnographic research that also involved the Kaibab Band of Paiute Indians, the Paiute Indian Tribe of Utah, the Pahrump Band of Paiute Indians, the Duckwater Shoshone Tribe, and the Confederated Tribes of the Goshute Indian Reservation (Stoffle et al. 1982, 1983).

Numic-speaking peoples have gone on record in past projects and stipulate again here that they are the American Indian peoples responsible for the cultural resources (natural and manmade) in this study area, because their ancestors were placed here by the Creator and subsequently have lived in these lands, maintaining and protecting these places, plants, animals, water sources, and cultural signs of their occupation.

These Numic-speaking peoples further stipulate that because they have lived in these lands since the end of the Pleistocene and throughout the Holocene (or approximately 15,000 years), they deeply understand the dramatic shifts in climate and ecology that have occurred over these millennia. Indian lifeways were dramatically influenced by these natural shifts, but certain religious and ceremonial practices persisted unchanged. These traditional ecological understandings are carried from generation to generation through the recounting of origin stories occurring in mythic times and by strict cultural and natural resource conservation rules. The involved American Indian Tribal governments and their appointed cultural representatives have participated in this PEIS

25
26

Tribal Perspectives on the Significance of East Mormon Mountain SEZ (Cont.)

in order to explain the meaning and cultural centrality of the plants, animals, spiritual trails, healing places, and places of historic encounters that exist in these lands.

Central to the American Indian interpretation of the proposed SEZ is the Mormon Mountains massif, which is about 26 mi (42 km) long from north to south and 17 mi (27 km) wide. It lies about 15 mi (24 km) west of East Mormon Mountain SEZ.

A central feature of this region is a hydrological path that begins in the high mountains and follows South Fork Toquop Wash and Toquop Wash to the Virgin River. Along this path are traditional spiritual trails known as *Puha* Paths. From distant communities, including those along the Virgin and Colorado rivers, these paths were utilized to seek power in the mountains. These activities have occurred since Creation. Along these *Puha* Paths, places were marked where special activities occurred. This is exemplified by the peckings and paintings that are found in the South Fork Toquop Wash, the paintings in Caliche Caves, and the presence of artifacts throughout the area.

Potato Woman is a long ridge located at the southwestern edge of the Mormon Mountain massif, some 23 mi (37 km) SW of the SEZ. Southern Paiute people associate Potato Woman with Creation and a mountain sheep origin story. Potato Woman is known as a powerful place—so powerful that traditionally Indian people would not live or camp near her.

Toquop Wash is located 3.5 mi (5.6 km) west of the East Mormon Mountain SEZ. Tribal representatives believed that this place is connected to the study area and both are part of the larger Mormon Mountain cultural landscape. Toquop Wash is a *Puha* connector that the Paiute people believe was used to travel to various destinations in the Mormon Mountains massif. The Toquop Wash system connects both East Mormon Mountain (via South Fork Toquop Wash) and the Clover Mountains (via Toquop Wash) to the Virgin River and beyond.

Southern Paiute representatives interviewed during the Mormon Mountain Oral History study and the Solar PEIS ethnographic studies discussed how they believe places like Toquop Wash were located along a trail system that connected Southern Paiute communities along the Virgin River to ceremonial places in the Mormon Mountains. The trail began at the junction of the wash and the river and follows the wash past the South Toquop Wash Pecking Site to Mormon Peak. Pilgrimage trails can be predicted by using Southern Paiute place logic. For example, knowing that people follow pilgrimage trails to powerful destination places, one knows that the trail must follow that natural flow of water in order to pass through places with high levels of *Puha*. A pilgrimage trail passes by a water source, a place of volcanic activity, and through some sort of narrow and constricted space. By following these trails, pilgrims travel to isolated places far away from their communities and other people.

The Salt Song Trail traverses through the Mormon Mountains region. The Salt Song Trail is a sacred song trail to the Southern Paiute people that encompasses parts of Nevada, California, Arizona, and Utah (Stoffle et al. 2002). The Salt Song is part of a ceremony known as the Cry, during which the deceased person's soul is guided to the afterlife. It is denoted by specific topographic features and spiritual places. This song trail guides the soul throughout Southern Paiute territory. This song trail is arguably the most important song trail in the Southern Paiute world, in that every person will eventually walk it.

In the historic period, this area may have been a region of refuge. The Mormon Mountains region was specifically sought out because the *Puha* of the caves could protect the most vulnerable individuals from capture, enslavement, or disease (Ruuska et al. 2011).

1
2
3
4

Tribal Perspectives on the Significance of East Mormon Mountain SEZ (Cont.)

Finally, during multiple field visits, Native American representatives identified 34 traditional-use plants within the proposed project boundary. The presence of animals in an area contributes to the overall cultural importance of an area to Indian people. One animal that drew particular interest from the cultural representatives was the Desert Horned Lizard, also commonly known as a horned toad. Traditionally, the horned lizard was used as a medicine by Southern Paiute doctors, and the lizard appears in a Creation story. Another animal that drew notice was the mountain sheep. Many mountain sheep stories and songs are also associated with this area. Mountain sheep are believed to be spiritual animals. –Their images are interpreted by Indian people as symbolic of the normal spirit helper of the rain shaman” (Stoffle et al. 2002).

B.3.2.3 Rationale for Eliminating the SEZ

On the basis of public comments received on the Draft Solar PEIS, review by the U.S. Department of the Interior Bureau of Land Management (BLM), and continued review of potential impacts identified in the Draft Solar PEIS, the East Mormon Mountain SEZ will be eliminated from further consideration and will not be identified as an SEZ in applicable land use plans. The potential impacts from solar development in the proposed East Mormon Mountain SEZ were considered sufficient reason to eliminate the area from further consideration as an SEZ.

Although the area will be dropped from consideration as an SEZ, the lands that composed the proposed East Mormon Mountain SEZ will be retained as solar right-of-way variance areas, because the BLM expects that individual projects could be sited in this area to avoid and/or minimize impacts. Any solar development within this area in the future would require appropriate environmental analysis.

1 **B.4 NEW MEXICO**

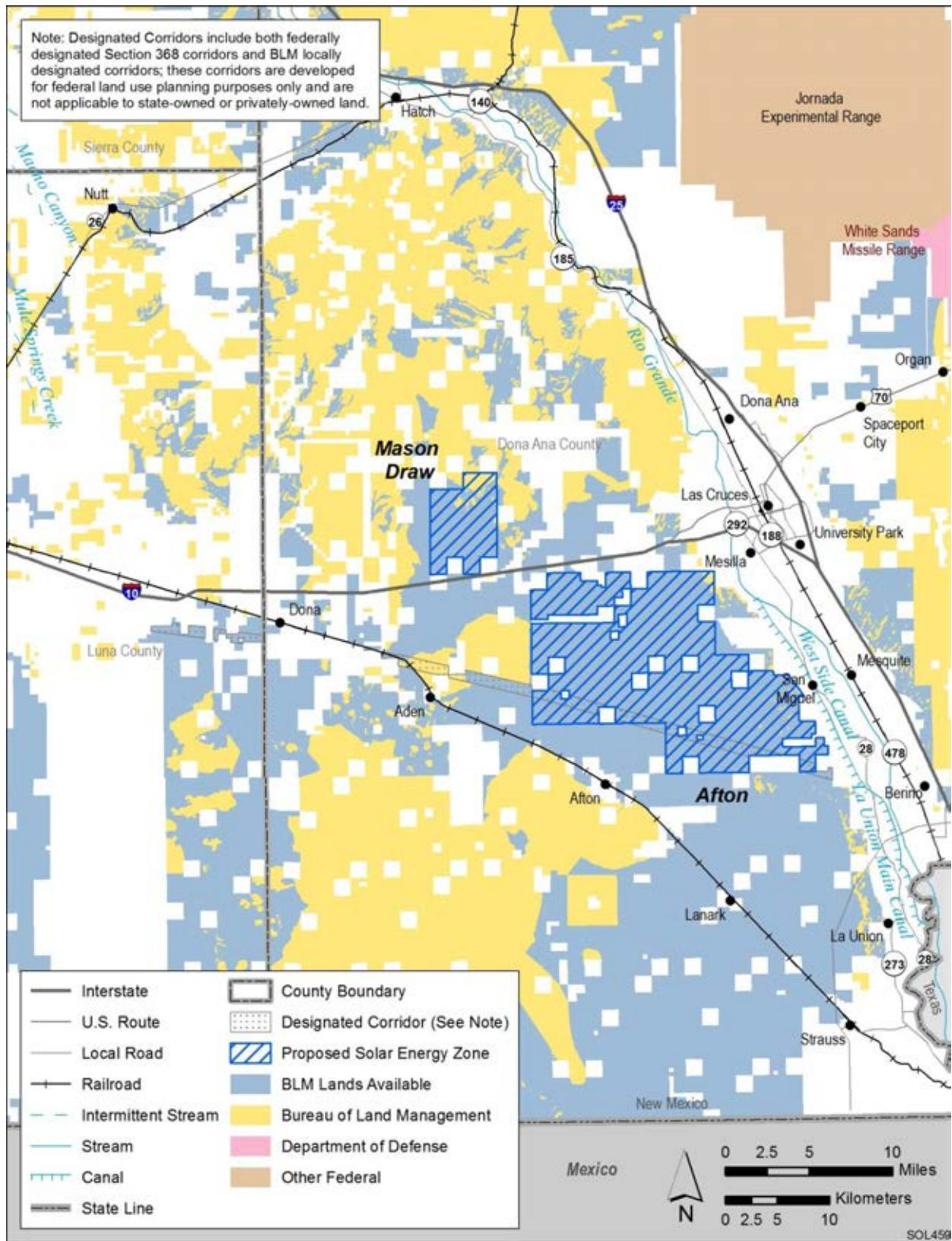
2
3
4 **B.4.1 Mason Draw**

5
6
7 **B.4.1.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic**
8 **Environmental Impact Statement (PEIS)**
9

10 The proposed Mason Draw solar energy zone (SEZ), as presented in the Draft Solar
11 PEIS, had a total area of 12,909 acres (52 km²). It is located in Doña Ana County in southern
12 New Mexico (Figure B.4.1-1). The nearest towns of Doña Ana, Las Cruces, Mesilla, Picacho,
13 and University Park are at least 12 mi (19 km) from the SEZ. The nearest residences to the SEZ
14 are about 3 mi (5 km) to the east.

15
16 Potential environmental and other impacts identified in the Draft Solar PEIS included the
17 following:

- 18
19 • The historic setting of the route of the Butterfield Trail would be adversely
20 affected by construction of solar facilities in the SEZ; this impact would be
21 difficult to mitigate. There would be minor adverse impacts on scenic and
22 recreational resources in the Prehistoric Trackways National Monument and
23 the Robledo Mountains Wilderness Study Area and Area of Environmental
24 Concern.
- 25
26 • The grazing permits for the Corralitos Ranch grazing allotment would be
27 reduced, and a maximum of 970 animal unit months would be lost.
- 28
29 • Areas developed for solar energy production would be closed to recreational
30 use, resulting in lost opportunities for backcountry driving, hiking/walking,
31 bird-watching, and hunting.
- 32
33 • The U.S. Department of Defense indicated that solar technologies with
34 structures higher than 100 ft (30 m) would adversely affect military airspace.
- 35
36 • Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil
37 erosion by wind and runoff, sedimentation, and soil contamination) could
38 occur.
- 39
40 • Groundwater use would deplete the aquifer to the extent that, at a minimum,
41 wet-cooling options would not be feasible.
- 42
43 • Clearing of a large portion of the proposed SEZ could affect wetland, dry
44 wash, woodland, playa, and riparian habitats, depending on the amount of
45 habitat disturbed. The establishment of noxious weeds could result in habitat
46 degradation.



1

2 **FIGURE B.4.1-1 Proposed Mason Draw SEZ as Presented in the Draft Solar PEIS**

- 1 • Potentially suitable habitat for 29 special status species occurs in the affected
2 area of the proposed SEZ; less than 1.0% of the potentially suitable habitat for
3 any of these species and any wildlife species occurs in the region that would
4 be directly affected by development.
5
- 6 • If aquatic biota are present, they could be affected by the direct removal of
7 surface water features within the construction footprint, a decline in habitat
8 quantity and quality due to water withdrawals and changes in drainage
9 patterns, as well as increased sediment and contaminant inputs associated with
10 ground disturbance and construction activities.
11
- 12 • During construction, temporary exceedances of ambient air quality standards
13 for particulate matter at the SEZ boundaries are possible. These high
14 concentrations, however, would be limited to the immediate area surrounding
15 the SEZ boundary.
16
- 17 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
18 could be observed by visitors to the Butterfield Trail and for travelers on
19 Interstate-10 (I-10), I-25, and I-70. Moderate to strong visual contrasts could
20 be observed by visitors to the Aden Hills Special Recreation Management
21 Area.
22
- 23 • The potential for impacts on significant paleontological resources in the
24 proposed SEZ is unknown but could be high. Direct impacts on significant
25 cultural resources could occur in the proposed SEZ, especially in dune areas.
26 Visual impacts on two trail systems, including a National Historic Trail would
27 occur. The nearby Potrillo Mountains provided home bases for some
28 Chiricahua groups. Views from these mountains may be of cultural
29 importance.
30
- 31 • Minority populations occur within a 50-mi (80-km) radius of the proposed
32 SEZ boundary; thus adverse impacts of solar development could
33 disproportionately affect minority populations.
34
35

36 **B.4.1.2 Summary of Comments Received**

37

38 Of the comments received on the proposed Mason Draw SEZ, most were in favor of
39 eliminating the area as an SEZ (New Mexico Department of Game and Fish [NMDGF]). Others
40 supported designating the area as an SEZ, provided boundary adjustments were made. The
41 Mesilla Valley Audubon Society and The Wilderness Society et al.⁹ supported designating the

⁹ The Wilderness Society, New Mexico Wilderness Alliance, Defenders of Wildlife, Audubon New Mexico, Gila Resources Information Project, Gila Conservation Coalition, Western Environmental Law Center, Southwest Environmental Law Center, Upper Gila Watershed Alliance, Sierra Club, Natural Resources Defense Council, Soda Mountain Wilderness Council, and Sierra Trek submitted joint comments on the proposed New Mexico SEZs. Those comments are attributed to The Wilderness Society et al.

1 area as an SEZ if the boundary were adjusted to exclude the Sleeping Lady Hills unit of New
2 Mexico Wilderness Alliance’s Citizens’ Proposed Wilderness Inventory.

3
4 The New Mexico Department of Agriculture expressed concern for ranching operations
5 in the area and the disproportionate burden that would be placed on ranchers if development
6 occurred on the SEZ. The NMDFG supported elimination of the Mason Draw SEZ, because of
7 the presence of large areas of intact native grassland of the Chihuahuan Semi-Desert Grasslands
8 type, and populations of antelope, quail, and doves that make the area a popular and high-quality
9 hunting and wildlife-watching recreational resource. The Wilderness Society et al. also had
10 concerns about impacts on wildlife and wildlife habitat, including pronghorn, mule deer, and
11 Aplomado falcon, as well as overlap of the SEZ with a the portion of the Good sight Mountains’
12 Citizens’ Proposed Wilderness Area on the northern end of the unit. The Full Circle Heritage
13 Services recommended a robust Endangered Species Act and Section 106 consultation process.
14

15 16 **B.4.1.3 Rationale for Eliminating the SEZ**

17
18 On the basis of public comments received on the Draft Solar PEIS, review by the
19 U.S. Department of the Interior Bureau of Land Management (BLM) and continued review of
20 potential impacts identified in the Draft Solar PEIS, the Mason Draw SEZ will be eliminated
21 from further consideration and will not be identified as an SEZ in applicable land use plans. The
22 potential impacts from solar development in the proposed Mason Draw SEZ were considered
23 sufficient reason to eliminate the area from further consideration as an SEZ.
24

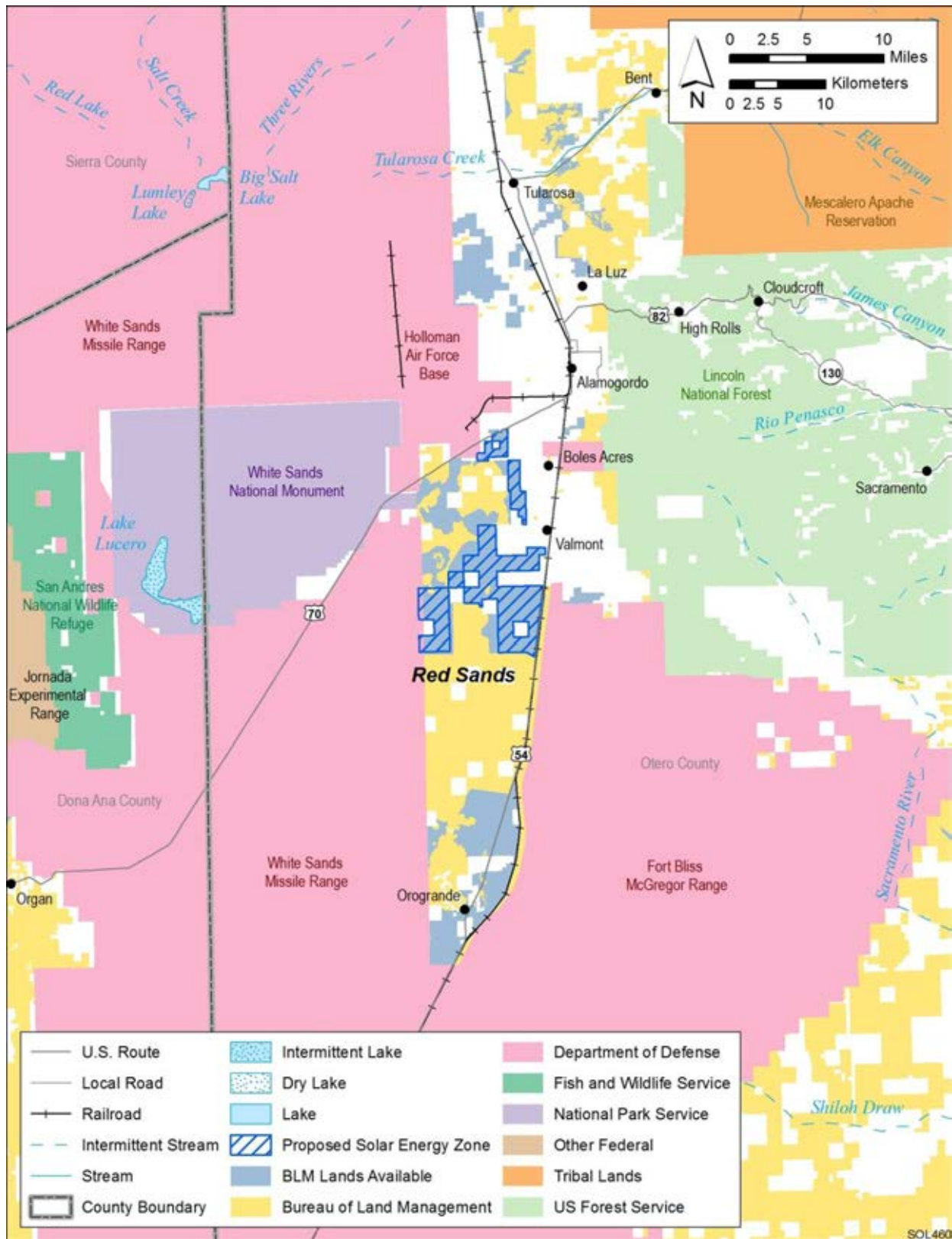
25 Although the area will be dropped from consideration as an SEZ, the lands that composed
26 the proposed Mason Draw SEZ will be retained as solar right-of-way variance areas, because the
27 BLM expects that individual projects could be sited in this area to avoid and/or minimize
28 impacts. Any solar development within this area in the future would require appropriate
29 environmental analysis.
30

31 32 **B.4.2 Red Sands**

33 34 35 **B.4.2.1 Summary of Potential Impacts Identified in the Draft Solar Programmatic 36 Environmental Impact Statement (PEIS)**

37
38 The proposed Red Sands solar energy zone (SEZ), as presented in the Draft Solar PEIS,
39 had a total area of 22,520 acres (91 m²). It is located in Otero County in south–central New
40 Mexico (Figure B.4.2-1). The towns of Boles Acres and Alamogordo are located about 2 mi
41 (3 km) east and 6 mi (10 km) northeast of the SEZ, respectively.
42

43 Potential environmental and other impacts identified in the Draft Solar PEIS included the
44 following:
45



1

2

FIGURE B.4.2-1 Proposed Red Sands SEZ as Presented in the Draft Solar PEIS

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- Because of the fragmented nature of the SEZ, it is likely that public access routes to lands outside the SEZ would be blocked by solar development.
 - Wilderness characteristics in the Culp Canyon Wilderness Study Area (WSA) would be adversely affected. Scenic values and recreational use in the Sacramento Escarpment Area of Environmental Concern (ACEC) and the U.S. Forest Service (USFS) Roadless Areas on the front of the Sacramento Mountains would be adversely affected. Visitors to the eastern and southeastern portions of the White Sands National Monument would have clear views of development in portions of the SEZ and this would have an adverse effect on visitor experience in the monument.
 - Grazing permits for the Bar H W Ranch, Diamond A Ranch, Escondido Well, Lone Butte, and White Sands Ranch grazing allotments would be reduced. A maximum of 2,495 animal unit months would be lost.
 - Recreational use in the Culp Canyon WSA, Sacramento Escarpment ACEC, White Sands National Monument, and the USFS Roadless Areas would be adversely affected and would not be completely mitigated.
 - The U.S. Department of Defense (DoD) expressed concern over any facilities constructed in the SEZ that could affect its current operations, including the potential for flight restrictions above any solar facilities and the height of solar facilities that could interfere with approaches to and departures from Holloman Air Force Base or that would intrude into low-level airspace.
 - Impacts on soil resources (e.g., soil compaction, soil horizon mixing, soil erosion by wind and runoff, sedimentation, and soil contamination) could occur.
 - Groundwater use would deplete the aquifer to the extent that, at a minimum, wet-cooling options would not be feasible.
 - Clearing of a large portion of the proposed SEZ could affect wetland, dry wash, playa, and dune habitats, depending on the amount of habitat disturbed. The establishment of noxious weeds could result in habitat degradation
 - Potentially suitable habitat for 43 special status species occurs in the affected area of the proposed SEZ. For most of these species and most wildlife species, less than 1.0% of the potentially suitable habitat occurs in the region that would be directly affected by development. For several special status species and two wildlife species, between 2 and 3% of the potentially suitable habitat in the region occurs in the area of direct effects.
 - If aquatic biota are present in wetland, dry wash, riparian, or playa areas of the SEZ, they could be affected by the direct removal of surface water features

1 within the construction footprint, a decline in habitat quantity and quality due
2 to water withdrawals and changes in drainage patterns, as well as increased
3 sediment and contaminant inputs associated with ground disturbance and
4 construction activities.

- 5
- 6 • Temporary exceedances of ambient air quality standards for particulate matter
7 at the SEZ boundaries are possible during construction. These high
8 concentrations, however, would be limited to the immediate area surrounding
9 the SEZ boundary.
- 10
- 11 • Although the SEZ is in an area of low scenic quality, strong visual contrasts
12 could be observed by visitors to the White Sands National Monument, Culp
13 Canyon WSA, Sacramento Escarpment ACEC, Lone Butte, and for travelers
14 on Interstate-70 and U.S. 54. Strong visual contrasts could be observed by
15 residents of the communities of Alamogordo and Boles Acres.
- 16
- 17 • During construction, noise levels at the nearest residences could be higher
18 than the U.S. Environmental Protection Agency (EPA) guidance levels.
19 During operations, noise levels at the nearest residences could be above EPA
20 guidance levels if concentrating solar power facilities with energy storage
21 technologies (which could extend the daily operational time by 6 hours or
22 more) were used at the SEZ, and equal to EPA guidance levels if dish engine
23 technology were used at the SEZ.
- 24
- 25 • The potential for impacts on significant paleontological resources in the
26 proposed SEZ is low. Direct impacts on significant cultural resources could
27 occur in the proposed SEZ. The adjacent Sacramento and San Andres
28 Mountains provided home bases for some Mescalero groups. Views from
29 these mountains may be of cultural importance.
- 30
- 31 • Minority populations occur within a 50-mi (80-km) radius of the proposed
32 SEZ boundary; thus adverse impacts of solar development could
33 disproportionately affect minority populations.
- 34
- 35

36 **B.4.2.2 Summary of Comments Received**

37
38 Many comments on the proposed Red Sands SEZ were received. Some commentors were
39 in favor of eliminating the area as an SEZ (e.g., the National Parks Conservation Association, the
40

1 Cultural Resources Preservation Council), while others (e.g., the New Mexico Department of
2 Game and Fish and The Wilderness Society et al.¹⁰) supported designating the area as an SEZ.
3

4 The Wilderness Society et al. was concerned that groundwater withdrawals might affect
5 the White Sands pupfish. The Cultural Resources Preservation Council (CRPC) recommended
6 that the U.S. Department of the Interior Bureau of Land Management (BLM) modify the
7 boundaries or drop the SEZ entirely. The CRPC also suggested that the BLM work closely with
8 affected Tribes to determine whether development of the SEZ could cause adverse impacts on
9 sacred viewsheds and whether those impacts could be adequately mitigated. The National Parks
10 Conservation Association favored eliminating the Red Sands SEZ because development within
11 the SEZ could jeopardize groundwater at White Sands National Monument, and because it would
12 have adverse impacts on the development and stability of the gypsum sand dunes and on visual
13 resources of the White Sands National Monument. The DoD recommended that no power tower
14 facilities be allowed in the SEZ.
15

16 17 **B.4.2.3 Rationale for Eliminating the SEZ** 18

19 On the basis of public comments received on the Draft Solar PEIS, review by the BLM,
20 and continued review of the potential impacts identified in the Draft Solar PEIS, the Red Sands
21 SEZ will be eliminated from further consideration and will not be identified as an SEZ in
22 applicable land use plans. The potential impacts from solar development in the proposed Red
23 Sands SEZ were considered sufficient reason to eliminate the area from further consideration as
24 an SEZ.
25

26 Although the area will be dropped from consideration as an SEZ, the lands that composed
27 the proposed Red Sands SEZ will be retained as solar right-of-way variance areas, because the
28 BLM expects that individual projects could be sited in this area to avoid and/or minimize
29 impacts. Any solar development within this area in the future would require appropriate
30 environmental analysis.
31

32 33 **B.5 REFERENCES** 34

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