

DESERT TORTOISE COUNCIL

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Ray Bransfield
Palm Springs Fish and Wildlife Office
777 East Tahquitz Canyon Way, Suite 208,
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RE: Docket No. FWS–R8–ES–2022–0034; Draft Environmental Assessment for the Proposed Issuance of an Incidental Take Permit for the Desert Tortoise for the Bellefield Solar Energy Project, Kern County California and Bellefield Solar Farm Habitat Conservation Plan

Dear Mr. Bransfield,

The Desert Tortoise Council (Council) is a non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public's understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed action in habitats occupied by Mojave desert tortoise (*Gopherus agassizii*) (synonymous with Agassiz's desert tortoise), our comments pertain to enhancing protection of this species during activities funded, authorized, or carried out by the U.S. Fish and Wildlife Service (USFWS or Service). We request that our comments be added to the Decision Records for these proposed actions. Please accept, carefully review, and include in the relevant project files the Council's following comments and attachments for the proposed actions.

The Mojave desert tortoise is now on the list of the world's most endangered tortoises and freshwater turtles. It is in the top 50 species. The International Union for Conservation of Nature's

(IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers the Mojave desert tortoise to be Critically Endangered (Berry et al. 2021). As such, it is a “species that possess an extremely high risk of extinction as a result of rapid population declines of 80 to more than 90 percent over the previous 10 years (or three generations), a current population size of fewer than 50 individuals, or other factors.” It is one of three turtle and tortoise species in the United States to be critically endangered.

The USFWS is proposing two actions – (1) to issue an incidental take permit (ITP) for the threatened Mojave desert tortoise associated with the construction, operation and maintenance, and decommissioning of the Bellefield Solar Farm and (2) to comply with the National Environmental Policy Act (NEPA) through preparation and public review of a Draft Environmental Assessment (EA) on the proposed issuance of the ITP.

Comments on Draft Environmental Assessment

The Draft EA describes the federal action as follows: 8minute Solar Energy (Proponent or Applicant) has requested the USFWS to issue an ITP for the Mojave desert tortoise on lands it proposes to develop a utility-scale solar project and generator tie-lines.

Proposed Action and Alternatives

The proposed action is to construct, operate and maintain, and decommission a utility-scale solar facility and generator tie-lines on several private parcels for up to 45-years. The solar facility could include photo voltaic (PV) solar panels, collector lines, stormwater management facilities, buildings for operations and maintenance, substations, water storage tanks, security fencing, and the energy storage system (ESS = batteries). The generator tie-in line would extend from the west side of the solar facility to Southern California Edison’s Windhub Substation, which is located to the west of State Route 14. Portions of the generator tie-in line may be constructed underground to avoid conflicts with operation of the Mojave Air and Space Port, reduce visual impacts, and allow the line to avoid conflicts with other existing utilities and infrastructure. Monopoles up to 200 feet in height would support the above-ground portions of the up-to 230-kilovolt power line. The Proponent has identified several routes where the generator tie line may be constructed. Collectively the footprint of these facilities is the solar project area and would directly impact 8,521 acres.

The solar project area is located on several private parcels northeast of the town of Mojave and north, south, and west of California State Route 58 (SR 58); the generator tie-in line would extend west from the solar field at the southwest side of California City to the Substation northwest of Mojave. Restoration after decommissioning the solar facility is not part of the proposed action as the facility is on private property and the land would be used for other development.

The mitigation area is located in the Bureau of Land Management’s (BLM or Bureau) Rudnick Common Allotment. Mitigation includes the funding of subsequent enhancement of habitat within the recently relinquished and retired grazing authorization on approximately 8,521 acres of the Rudnick Common Allotment. Habitat enhancement activities are not described or analyzed in the Draft EA as they have not been identified. In addition, they would be subject to BLM approval and authorization. This federal approval/authorization for enhancement activities would occur

under a separate process of the Endangered Species Act, that is, the section 7 consultation process rather than the section 10 ITP process. BLM would need to comply with NEPA and its planning process requirements prior to implementation.

The mitigation area is the area the Proponent has proposed as mitigation in its habitat conservation plan. The 8,521-acre mitigation area is located north of the town of Mojave to the west of State Route 14 in Kern County and northwest of the Onyx Ranch Mitigation Area.

The translocation areas (= recipient sites) are the areas the Proponent proposes to move tortoises to that would be impacted by construction of the project area. The translocation areas are about 600 acres and located within the BLM's Superior-Cronese Area of Critical Environmental Concern. Within this ACEC, Wildlands has identified GVP-4 through GVP-7 as suitable recipient sites in the Grass Valley Preserve. The sites are about 64 miles northeast of the project area.

The project area, mitigation area, and translocation area are within the Western Mojave Recovery Unit for the Mojave desert tortoise.

The Draft EA describes three action alternatives in addition to the No Action alternative:

- 1) proposed action - to issue an ITP as requested by the Proponent,
- 2) relocation rather than translocation of displaced tortoises - change the recipient site of displaced tortoise from the Superior-Cronese ACEC to lands adjacent to the proposed solar facility, and
- 3) modified fencing - modify the chain link fencing of the solar facility to allow tortoises to reoccupy the facility once construction is completed.

Connected Actions/ Issuance Criteria for Incidental Take Permits

In the Draft EA the USFWS says, "Because the Bureau [BLM] would conduct enhancement activities on the mitigation lands, incidental take resulting from those activities would not be covered by the Proponent's incidental take permit; the Service has evaluated the effect of the Bureau's enhancement activities on desert tortoises in other biological opinions."

This statement by USFWS indicates it knows what the enhancement measures are that will be implemented at the mitigation area. Please include in the NEPA document a description of these enhancement activities.

We are not sure why the USFWS is calling the enhancement activities the Bureau's enhancement activities. The Proponent would be funding them as part of the mitigation for the issuance of the ITP. Please modify this statement to describe who is responsible for these enhancement activities. If this is not correct and the BLM would be funding the enhancement activities, please correct this information in the NEPA document.

Although the Service may have issued "other biological opinions" that evaluated the effects of these activities and may have satisfied requirements of the Endangered Species Act (ESA), the purpose of a NEPA analysis is different. "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before

actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA” (40 CFR1500.1(b)).

The Council contends that simply stating that the USFWS has evaluated the effect of BLM’s enhancement activities on desert tortoise in other biological opinions does not demonstrate compliance with NEPA regulations. Biological opinions are not subject to public review; until recently they were not available online for the public to access, and many still are not/have not been uploaded to the USFWS’s ECOS website that hosts biological opinions. Thus, the section 7 consultation process that results in the issuance of biological opinions does not satisfy 40 CFR 1500.1(b).

In the Draft EA, the USFWS provides this information – “Issuance criteria for an incidental take permit for threatened wildlife (50 CFR 17.32(b)(2)) require that the Service find that.....The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such takings; The applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided; The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.”

Pursuant to Section 1508.25 of the Council on Environmental Quality’s (CEQ) regulations (40 CFR 1508.25), any environmental impact statement must cover the entire scope of a proposed action, considering all connected, cumulative, and similar actions in one document. Although the document USFWS has prepared is a Draft EA, we contend this NEPA regulation applies to environmental assessments. The entire scope of the proposed action is for the USFWS to determine whether to issue an ITP. The issuance criteria for an ITP includes a description and analysis of the conservation plan that will minimize and mitigate the taking to the maximum extent practicable. Complying with this requirement would mean that the mitigation for the incidental take would need to be described and analyzed to determine whether it meets this and the remaining issuance criteria. To meet this requirement, USFWS needs to include a description and analysis of the enhancement activities that would occur or likely occur at the mitigation area, and the benefits that would occur to the tortoise at the mitigation area, the recovery unit, and rangewide during the 45-year permit term.

The Council argues that the enhancement activities in the mitigation area on BLM land are connected to the proposed action in the project area, and without the Proponent funding or otherwise implementing the enhancement activities in the mitigation area, the Proponent would not be issued an ITP. In addition, we argue that the Proponent would not be able to mitigate to the maximum extent practicable (as no other alternative is presented in the Draft EA with mitigation at another location or other means of mitigating) and would not be issued an ITP. The issuance of an ITP is a federal action; the authorizing of enhancement activities on BLM land is a federal action. Including all federal actions under one NEPA analysis for this proposed action would also reduce or eliminate the temporal loss from the delayed implementation of enhancement activities. There would be no waiting for BLM analysis and authorization as these would have already occurred before issuance of the ITP. This is another reason that the Council believes the USFWS should describe and analyze the enhancement activities in the mitigation area in the NEPA document.

Finally, we were unable to find any wording in the NEPA regulations or the ESA statute or regulations that prohibits the USFWS from issuing an ITP to a federal agency. Thus, enhancement actions on BLM land in the mitigation area could be covered activities under the ITP and described and analyzed in the NEPA document. This approach would provide a coordinated analysis of all federal actions connected to the issuance of the requested ITP for the proposed action. The NEPA regulations ensure agencies will prepare a complete environmental analysis that provides a “hard look” at the environmental consequences of all proposed actions instead of segmenting environmental reviews as is occurring in this Draft EA. The Council requests that the enhancement activities in the mitigation area be described and analyzed in the NEPA document.

Impacts of the Modified Fencing Alternative

In section 5.1.2.4.2, Modified Fencing Alternative: Modification of Fencing to Allow Desert Tortoises to Return to the Solar Site after Construction, the USFWS provides the following information on the impacts to the tortoise, “Desert tortoises that re-occupy the solar site would also be vulnerable to maintenance activities; for example, vehicles used to wash solar panels or control vegetation could crush individuals and collapse their burrows. The proponent would likely implement additional protective measures to attempt to reduce these effects.”

In the Draft EA, we found no analysis of these direct impacts to the tortoise population, no description and analysis of the indirect impacts to tortoises/tortoise habitat, or description and analysis of effectiveness of protective measures the Proponent would implement to minimize these impacts. Please include these descriptions and analyses in the NEPA document

Impacts to Special Status Species

5.1.2.4.3 Mohave Ground Squirrel: In this section, we found a description of potential direct impacts to the Mohave ground squirrel and its habitat, but we found no analysis of the impacts to the population in the project area. Animals would be lost, habitat would be lost, but what are the effects to the species in the project vicinity and rangewide? Please add this data and analysis to the NEPA document.

5.1.2.4.4 Swainson’s Hawk: In this section, USFWS says, “The development of the solar field would represent the loss of a relatively small amount of foraging habitat.” We ask what is a relatively small amount of foraging habitat? It could be a loss of a small area but result in the loss of a large percentage of remaining habitat in the area. Please provide clarifying data and analysis on the extent of the impacts and support the USFWS conclusion.

5.1.2.4.5 Burrowing Owl: In the Draft EA USFWS says, “Animals killed by project activities and water used to control dust would likely attract raptors and other predators of burrowing owls, such as coyotes and feral dogs.”

We request that the information on coyotes and feral dogs should be included in the Environmental Consequences section on the tortoise. Please include this impact in the section on tortoises and revise the analysis accordingly.

In this section we found a description of potential direct impacts to the burrowing owl and its habitat, but we found no analysis of the impacts to the species in the project area. Animals would

be lost, habitat would be lost, but what are the effects to this species in the project vicinity and rangewide? Please add these data and analyses to the NEPA document.

5.1.2.4.6 Desert Kit Fox and American Badger: In this section, we found a description of potential direct impacts to the desert kit fox and American badger, but we found no analysis of the impacts to the species in the project area. Animals would be lost, habitat would be lost, but what are the effects to these two species in the project vicinity and rangewide? Please add these data and analyses to the NEPA document.

5.1.5 Greenhouse Gas Emissions: In the Draft EA, USFWS provides information that “permanently clearing the land results in little to no [carbon] sequestration; seeding and management as pastures results in the greatest amount of sequestration. The amount of sequestration that would occur by maintaining or restoring the pre-construction vegetation falls in between the two.”

Because the project Proponent has identified mitigation area with the objective of increasing the levels of annual and perennial vegetation, this increase in vegetation should be considered in the analysis of sequestration of greenhouse gases. Please include this analysis in this section of the NEPA document.

5.1.13.2.1 Surface Water Resources: In the Draft EA USFWS says, “Potential adverse effects to surface water resources would be limited and would be largely related to surface flows that could be affected by facility construction.”

This statement is concerning. It implies that existing surface flows could be affected by construction of the solar facility. We found no information on how this change in surface flow may affect the downstream/downslope areas from the project site, If these flows may be reduced or diverted, that indicates that soils and vegetation offsite from the project area, including forage and cover for the tortoise downstream/downslope may be reduced. If so, the NEPA document should include an analysis of this indirect impact and the extent or area it indirectly impact.

Mitigation on Public Land

The Council is concerned that the enhancement actions would be implemented in a mitigation area on BLM land. When Congress created the California Desert Conservation Area (CDCA), it directed BLM “to provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality.” With respect to the tortoise, the data on its status and trend (please see attachment - Appendix A – Status of the Mojave Desert Tortoise (*Gopherus agassizii*) demonstrate that BLM’s effectiveness in managing for sustained yield and environmental quality have not occurred. In addition, BLM has a history of amending its management plan of the CDCA to allow for more disturbance and development, which has adversely impacted numerous resources, including the Mojave desert tortoise and its habitat.

We were unable to find information in the Draft EA that describes the current uses that are authorized and unauthorized in the mitigation area, or an analysis of how these uses are impacting the resident tortoise population and tortoise habitat in the mitigation area. This is baseline

information that should be included in the NEPA document. The Council requests that this information be added to the NEPA document.

The tortoise is impacted by a multitude of threats. Focusing on individual threats has resulted in little positive change for desert tortoise populations for several reasons. First, the individual threats approach generally does not account for compensatory mortality in which one mortality factor takes tortoises that were “saved” from another mortality factor (Tracy et al. 2004). Second, managers may attend first to those threats they view as most tractable, in light of available resources and political exigencies, but managing those threats may not necessarily produce the best results (Tracy et al. 2004). Third, focusing on individual threats suffers from Leibig’s Law of the Minimum (Berryman 1993). By focusing on and removing only the one or two threats considered the most important, no response (e.g., increase in tortoise numbers) may be realized because the next most important threat becomes the limiting factor for population recovery. Thus, the most effective management will be based on recognizing the importance of addressing the multiplicity of threats impacting specific populations (Tracy et al. 2004).

From the limited information provided about the current and future management of the mitigation area, we conclude that the mitigation area is not being managed/would not be managed in the future to address the multiplicity of threats. Rather, an “individual threats approach” is the approach being implemented in the mitigation area. We conclude this as the described mitigation is the removal of livestock grazing from the mitigation area and the assignment of that livestock forage to wildlife including the tortoise. However, there are likely other threats to the tortoise that would continue to occur in the mitigation area or may be authorized in the future such as authorized and unauthorized OHV use, recreational mining, right-of-way grants, etc. One impact from these and other human uses in the mitigation area is that it promotes the spread and regeneration of non-native invasive plants with low nutritional value that outcompete native annual plants with nutritional values needed by tortoises. Consequently, although one threat, livestock grazing may have been removed and enhancement activities to encourage growth of native plants may occur, the remaining threats impact the tortoise by continuing to promote the growth and spread of non-native plants. The result of this and other impacts is tortoise mortality that is greater than recruitment.

We are concerned that implementing enhancement activities to benefit the tortoise may be ineffective if BLM allows other human uses that that disturb, degrade, and /or destroy desert tortoises and their habitat in the mitigation area to continue, and/or authorizes new/increased human uses in the future. In addition, we found no commitment by the Proponent or BLM to monitor the effectiveness of the enhancement activities or their effects on improving the status of the tortoise in the mitigation area. Please include this information in the NEPA document.

Mitigation Area Would Not Provide Connectivity

On page 29 of the Draft EA, USFWS says, “Because State Route 58 lies adjacent to the proposed solar site, connectivity is currently limited; few, if any, desert tortoises likely are able to cross that highway.” We would make the same argument about selecting the Rudnick Grazing allotment as the location for the mitigation area to improve tortoise habitat. It is along the western boundary of the range of the tortoise, is west of California State Route (SR) 14, a multilane highway, and not physically connected to/near any area identified as necessary for the survival and recovery of the

tortoise (e.g., critical habitat) or currently managed for the tortoise (e.g., inside the boundary of a BLM ACEC). The status of tortoise population west of Highway 14 in this portion of the former Rudnick allotment is unknown as information on its abundance and density were not found in the Draft EA. The Council asserts the tortoise population in the mitigation area is unlikely to survive and contribute to the survival and recovery of the tortoise in the Western Mojave Recovery Unit for the following reasons:

- The likely small size of the current tortoise population,
- USFWS data indicating that tortoise populations in the Western Mojave Recovery Unit continue to decline (USFWS 2015, 2016, 22018, 2019, 2020b, 2022a, 2022b),
- USFWS data that the level of adult tortoise density and numbers is below population viability (USFWS 1994, page 36; 2011, page 76),
- The location of the mitigation is along the western boundary of the range of the tortoise
- It is on the west side of a major highway, California SR 14, that creates a likely impenetrable barrier to tortoise movement across it to the rest of the range of the species. Roads and urban areas form barriers to movement and tend to create small, local populations which are much more susceptible to extinction than large, connected populations (Wilcox and Murphy 1985).
- Existing and future development plans of private lands that occur along and east of California SR 14 would act as a barrier to tortoise movement to the east to connect to tortoise populations in the Fremont-Kramer Tortoise Conservation Area/BLM ACEC.
- Small isolated tortoise populations have a greater risk of localized extirpation from stochastic events or from inbreeding depression (Boarman et al. 1997 and Boarman and Sazaki 2006 cited in USFWS 2011). Climate change would likely accelerate this process.

All of these factors affecting the tortoise population in the Rudnick Allotment would likely result in extirpation of the tortoises in this mitigation area during the permit term.

Cumulative Impacts

We were unable to find an analysis of cumulative impacts to the tortoise in the Draft EA.

In *Grand Canyon Trust v. F.A.A.*, 290 F.3d 339, 345-46 (D.C. Cir. 2002), the court decided that agencies must analyze the cumulative impacts of actions in environmental assessments. We were unable to find a section in the Draft EA that described and analyzed the cumulative effects of the proposed issuance of an ITP. Please add this section to the Draft EA and ensure that the Council on Environmental Quality's (CEQ) "Considering Cumulative Effects under the National Environmental Policy Act" (1997) is followed, including the eight principles (listed below), when analyzing cumulative effects of the proposed action to the tortoise and its habitats.

CEQ states, "Determining the cumulative environmental consequences of an action requires delineating the cause-and-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern. The range of actions that must be considered includes not only the project proposal but all connected and similar actions that could contribute to cumulative effects." The analysis "must describe the response of the resource to this environmental change." Cumulative impact analysis should "address the sustainability of resources, ecosystems, and human communities."

CEQs guidance on how to analyze cumulative environmental consequences, which contains eight principles listed below:

1. Cumulative effects are caused by the aggregate of past, present, and reasonable future actions.

The effects of a proposed action on a given resource, ecosystem, and human community, include the present and future effects added to the effects that have taken place in the past. Such cumulative effects must also be added to the effects (past, present, and future) caused by all other actions that affect the same resource.

2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, non-federal, or private) has taken the actions.

Individual effects from disparate activities may add up or interact to cause additional effects not apparent when looking at the individual effect at one time. The additional effects contributed by actions unrelated to the proposed action must be included in the analysis of cumulative effects.

3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.

Environmental effects are often evaluated from the perspective of the proposed action. Analyzing cumulative effects requires focusing on the resources, ecosystem, and human community that may be affected and developing an adequate understanding of how the resources are susceptible to effects.

4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.

For cumulative effects analysis to help the decision maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to the affected parties.

5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.

Resources are typically demarcated according to agency responsibilities, county lines, grazing allotments, or other administrative boundaries. Because natural and sociocultural resources are not usually so aligned, each political entity actually manages only a piece of the affected resource or ecosystem. Cumulative effects analysis on natural systems must use natural ecological boundaries and analysis of human communities must use actual sociocultural boundaries to ensure including all effects.

6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.

Repeated actions may cause effects to build up through simple addition (more and more of the same type of effect), and the same or different actions may produce effects that interact to produce cumulative effects greater than the sum of the effects.

7. Cumulative effects may last for many years beyond the life of the action that caused the effects.

Some actions cause damage lasting far longer than the life of the action itself (e.g., acid mine damage, radioactive waste contamination, species extinctions). Cumulative effects analysis needs to apply the best science and forecasting techniques to assess potential catastrophic consequences in the future.

8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters.

Analysts tend to think in terms of how the resource, ecosystem, and human community will be modified given the action's development needs. The most effective cumulative effects analysis focuses on what is needed to ensure long-term productivity or sustainability of the resource.

We request that this analysis focus especially on numbers 3, 6, 7, and 8 for the Mojave desert tortoise.

Status of the Mojave Desert Tortoise

To help you with this analysis, we have provided a summary of the status and trend of the tortoise by population, recovery unit, and rangewide (please see "Appendix A. Status of the Mojave Desert Tortoise (*Gopherus agassizii*)."

The Council contends that the USFWS data indicate an ongoing decline in density and abundance of adult tortoises, a decline in recruitment, tortoise densities below the USFWS's threshold for minimum viability for most tortoise populations, and the requirement that tortoises in all recovery units must survive and recover to recover the species indicates that the tortoise is in trouble regarding its survival during the 45-year permit term. We contend the Draft EA did not provide data and analyses to show that the issuance of the ITP will not further the decline of the tortoise at the population, recovery unit, and range-wide levels. Because of the declining status and trend for the tortoise with most populations below the viability density, we contend any proposed action in the Western Mojave Recovery Unit is a significant impact on the survival of the tortoise in the foreseeable future (e.g., the 45 years for the requested permit term) unless USFWS can clearly show that implementation of the proposed mitigation and translocation will contribute to reversing this trend. Because the Draft EA does not provide a description of the mitigation activities or documentation of their effectiveness, that is, scientific data and analyses, we believe a draft environmental impact statement is required as the proposed action would have a significant effect on the tortoise, a resource that is part of the human environment.

Tortoise Translocation Plan

We found no information or analysis on the proposed translocation area in the Draft EA, but some information/analysis is presented in Appendix B of the Draft EA – Agassiz's Desert Tortoise Translocation Plan. In this appendix, the USFWS says, "The Applicant made another small addition of approximately 214 acres in January, 2021 and this acreage was surveyed in February, 2021 in accordance with the small projects provision of the USFWS survey protocol which allows

for surveys to be conducted at any time of the year for projects below an acreage threshold of 500 acres in the western Mojave.”

The Council considers adding acreage to a proposed action that is already considered a large project but following the small project survey protocol to be segmentation or piecemealing of the proposed action. Such a practice would not meet the scientific criteria of the small project survey protocol as the protocols were developed using scientific data and statistics and to derive the best figure from which the USFWS would determine the amount of incidental take. Consequently, the results from implementing the small survey protocol may not be valid scientifically /statistically. It also suggests that the USFWS would accept the results of surveys following the small project survey protocol for a small project that increased in area over time to a large project. This would be an example of piecemealing and of not applying the appropriate survey protocol to meet scientific/statistical standards and criteria to adequately calculate the amount of incidental take.

We request that the USFWS explain in the Draft EA why it accepted the results from implementing the small projects survey protocol in this case. If the explanation does not include scientific support, we would argue that this survey activity did not comply with USFWS survey protocol. This would set an unwelcome precedent for use of the survey protocols for future projects and compromise the scientific basis for and purpose of the survey protocols, the validity of the results, and likely produce an underestimate of the amount of incidental take of the tortoise.

In the Translocation Appendix, USFWS estimates that 69 tortoises occur on the solar facility. The agency says, “proposed recipient sites are located in the Superior-Cronese ACEC approximately 64 miles northeast of the Project Area. These sites, identified as GVP-4 through GVP-7 (Recipient Sites) are part of the Grass Valley Preserve, a mitigation package developed by Wildlands primarily for Mohave ground squirrel mitigation (Figure 7) for another project. The Preserve will be managed for conservation values.” The recipient sites are private parcels surrounded or bordered by BLM land. Collectively, these four sites cover 600 acres.

We are concerned that the recipient sites may have OHV routes and activity on them and other human uses that adversely impact tortoises. These impacts should be eliminated if the recipient sites are to be “managed for conservation values.”

Please included information on how the recipient sites are “managed for conservation values.” For example, are they fenced to exclude livestock and vehicle incursions? This information, especially on-the-ground management actions, should be included in the NEPA document so the pubic and the decisionmaker can determine the effectiveness of management for conservation values.

Please include in the NEPA document an analysis of the impacts from human uses at the recipient sites, a description of how the recipient sites are being “managed for conservation values,” and an analysis of how these impacts would affect the management of the recipient sites for conservation values for the tortoise.

One of the criteria that USFWS (2020a) identified as needed for a site to qualify as a recipient site was compatible management with continued desert tortoise occupancy.

In the Translocation Plan, the USFWS says, “The Recipient Sites are located within the Superior-Cronese ACEC. Land surrounding the Recipient Sites consists of a mix of federal lands, state lands, conservancies and private lands (Figure 7). With the exception of private lands, this area is managed for the benefit of natural resources, particularly desert tortoise.” The conclusion is the area surrounding the recipient sites and the Superior-Cronese ACEC has compatible management with continued desert tortoise occupancy. However, later in the Translocation Plan, information is presented that the tortoise density is 1.9 adults/km² in the Superior-Cronese ACEC, “the lowest density recorded in the western Mojave Desert (USFWS 2020b)”.

Although the 600 acres of recipient sites may be managed for conservation values including the conservation of the tortoise, their social behavior and size of lifetime home ranges means they will move to adjacent areas managed by BLM. We would argue that this low density of tortoises indicates that BLM is not effectively managing this ACEC for the tortoise. Hence, it may not meet the criterion of compatible management with continued tortoise occupancy. At the rate tortoise density has declined since 2005 in the three TCAs in the Western Mojave Recovery Unit (i.e., 5.95 to 1.9 tortoise per km²), including the Superior-Cronese ACEC, with the majority of lands managed by BLM, it is unlikely that tortoises will be present in the Superior-Cronese ACEC during the 45-year life of the proposed project. We strongly suggest that the USFWS and project proponent work with BLM to modify BLM’s management plan and on-the-ground management so the threats to the tortoise in the Superior-Cronese ACEC are substantially reduced and tortoise densities increase in the areas surrounding the recipient sites. This density calculation should not include population augmentation.

The Translocation Plan says “a control site is not required for this translocation effort owing to the small number of tortoises likely to be moved.” We request that the USFWS require the project proponent to establish and study/monitor a control site if the number of tortoises translocated is larger than expected.

The Translocation plan says there would be a “one year monitoring period.” After that, transmitters would be removed and monitoring would cease. Given current data that indicate that tortoises do not adjust to their recipient location for a few years, we would argue that for the translocation to be considered successful, monitoring should occur for longer than one year. In addition, it appears that other proposed solar projects (e.g., Aratina Solar in eastern Kern County) would be using the Wildlands managed site for translocation of tortoises. Use of the recipient sites by other projects for translocation would likely mean the number of tortoises to be translocated would be greater and a statistically-sound effectiveness monitoring program could be developed and implemented. We strongly suggest USFWS to include this option in the NEPA document.

Bellefield Solar Farm Habitat Conservation Plan

In 50 CFR 17.22(b)(1), the USFWS issuance criteria for an ITP include:

- The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such takings;
- The applicant will ensure that adequate funding for the conservation plan and procedures to deal with unforeseen circumstances will be provided;

- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

The Council asserts that the habitat conservation plan (HCP) has not met these three issuance criteria.

Minimize and Mitigate to the Maximum Extent Practicable: In the HCP, the Applicant has offered the following mitigation to minimize and mitigate to the maximum extent practicable. The Applicant has arranged the relinquishment and retirement of livestock grazing on approximately 8,521 acres of the Rudnick Common Allotment and the subsequent enhancement of habitat within that area. BLM would be responsible for the long-term management of the relinquished allotment as described in its land use plan (Bureau 2016) and any subsequent amendments. BLM and the Applicant are developing an agreement to demonstrate the funding mechanism and types of enhancement work that would be appropriate. The Proponent will fund the long-term management program, which could include enhancement activities, through a non-wasting endowment.

We have several concerns regarding this mitigation as satisfying the requirement that the Applicant minimize and mitigate the taking of the Mojave desert tortoise to the maximum extent practicable. First, First, mitigation is not in areas identified as crucial for tortoise recovery. recovery. The Applicant should be mitigating in the closest TCA, the Fremont-Kramer DWMA and or adding land to the Desert Tortoise Research Natural Area.

Second, the mitigation area would be managed “as described in [BLM’s] its land use plan and any subsequent amendments.” Currently, BLM is not effectively managing desert tortoise ACECs on lands it manages in the CDCA for the benefit/conservation of the tortoise. This is demonstrated by the USFWS data on the density and abundance of the tortoise in the three ACECs in the West Mojave portion of the CDCA. Please see our comments above on the “Status of the Mojave Desert Tortoise.”

BLM can change and has changed the management of its lands in subsequent plans in the West Mojave such as the removal of the Mohave Ground Squirrel Conservation Area 2016 and the increase in OHV route designations in tortoise ACECs in the 2019. These/similar land management changes in future BLM plan amendments may occur to the mitigation area. These changes would reduce the ability of the mitigation area to minimize and mitigate to the maximum extent practicable for the tortoise. Please see our comments above on “Mitigation on Public Land.”

Third, the taking of the tortoise including harm to the tortoise through loss/severe degradation of its habitat needed for feeding, breeding, and shelter would be permanent at the solar facility and the new generator tie line. However, we found no guarantee that the mitigation for this taking would be permanent at the mitigation area, that is, that the mitigation area would be managed effectively for the tortoise permanently. This absence supports the Council’s assertion that that proposed mitigation does not meet the criterion of mitigating the taking to the maximum extent practicable.

Fourth, most of the conservation program to minimize and mitigate incidental take relies on other entities for implementation but the Applicant has no management authority or oversight over these entities. The conservation strategy of the habitat conservation plan (HCP) relies on the management of lands inside the mitigation area and lands adjacent to the translocation area/solar facility. Most of these lands are under BLM and private management. Consequently, the Applicant has little or no control over how these lands are managed. The federal courts have ruled that such mitigation does not meet the purpose and intent of the statute/regulation (e.g., Klamath-Siskiyou Wildlands Center et al. v. NOAA et al., Case No. 13-cv-03717 (2015 U.S. Dist. LEXIS 44872 & 2015 U.S. Dist. LEXIS 70622) (N.D. Cal. 2015). For the USFWS incidental take permit, the court held that the Service improperly relied on mitigation provided by the U.S. Forest Service in making its “maximum extent practicable” (MEP) finding under ESA section 10(a)(2)(B)(ii) in violation of the requirement that only mitigation and other conservation measures provided by the applicant may be considered in making the finding. The court held that USFWS violated that section by “crediting” Fruit Growers Supply with mitigation provided by the Forest Service for the Northern spotted owl. Because USFWS took into account the conservation value provided by intermingled Forest Service lands in its MEP analysis, the court faulted the USFWS for relying on Forest Service lands as mitigation under the HCP.

Therefore, the conservation strategy should demonstrate clearly what parts of the implementation and funding of the HCP the Applicants control parts they does not. We believe this information is crucial to the analysis in the USFWS’s Findings document to determine whether the Applicants’ actions as described in the HCP will minimize and mitigate to the maximum extent practicable the impacts of the taking of the tortoise.

Ensure that Adequate Funding for the Conservation Plan Will Be Provided: Although the Applicant has agreed to establish an endowment fund that will be used by the involved agencies (i.e., USFWS, BLM, and CDFW) to manage the lands proposed as mitigation, the Council asserts that the estimated amounts for initial enhancement on a per acre are substantially underestimated. For example, under Enhancement of mitigation lands for desert tortoise, the funding amount is Approx. \$250 per acre. At the current labor rate, this amount would mean that one person would spend about 3 hours on each acre implementing enhancement activities at the mitigation area during the 45-year permit term. This calculation does not include travel time, or costs for equipment and or supplies. In addition, we found no information to account for the growing rate of inflation (the highest in 40 years) for goods and services or how long the funds would last before being fully spent. We did not find evidence that section “9.4.6 Planning for Inflation” in the HCP Handbook (USGWS and MNFS 2016) had been followed in the funding section of the HCP. Please revise the HCP to reflect current costs and to include inflation costs

Will Not Appreciably Reduce the Likelihood of the Survival and Recovery of the Species in the Wild: Please see our comments on the “Status of the Mojave Desert Tortoise” under the Draft Environmental Assessment section and Appendix A.

The issuance of an ITP would permit the take of an estimated 69 tortoises, and translocation of some but with reduced survival and absence of breeding by male translocated tortoises at recipient sites (Mulder et al. 2017), and enhancement of tortoise habitat that is isolated from more than 95 percent of the distribution and habitat of the tortoise. Because of the high number of non-viable

populations of tortoises throughout its range, including all populations in the Western Mojave Recovery Unit, and the absence of connectivity between the tortoises/tortoise habitat in the mitigation area with all TCAs and critical habitat units, the Council finds that any additional take of the tortoise in the western Mojave Recovery Unit appreciably reduces the likelihood of survival and recovery of the tortoise in this recovery unit and therefore rangewide.

We appreciate this opportunity to provide comments on these proposed actions and trust they will help protect tortoises during any resulting authorized activities. Herein, we reiterate that the Desert Tortoise Council wants to be identified as an Affected Interest for this and all other projects funded, authorized, or carried out by the USFWS that may affect species of desert tortoises, and that any subsequent environmental documentation for these proposed actions is provided to us at the contact information listed above. Additionally, we ask that you respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for these proposed actions.

Respectfully,



Edward L. LaRue, Jr., M.S.

Desert Tortoise Council, Ecosystems Advisory Committee, Chairperson

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Appendix A. Status of the Mojave Desert Tortoise (*Gopherus agassizii*)

To assist the Agencies with their analysis of the direct, indirect, and cumulative impacts of the Proposed Project on the Mojave desert tortoise, we provide the following information on its status and trend.

The Desert Tortoise Council (Council) has serious concerns about direct, indirect, and cumulative sources of human mortality for the Mojave desert tortoise given the status and trend of the species range-wide, within each of the five recovery units, and within the Tortoise Conservation Areas (TCAs) that comprise each recovery unit.

Densities of Adult Mojave Desert Tortoises: A few years after listing the Mojave desert tortoise under the federal Endangered Species Act (FESA), the U.S. Fish and Wildlife Service (USFWS) published a Recovery Plan for the Mojave desert tortoise (USFWS 1994a). It contained a detailed population viability analysis. In this analysis, the minimum viable density of a Mojave desert tortoise population is 10 adult tortoises per mile² (3.9 adult tortoises per km²). This assumed a male-female ratio of 1:1 (USFWS 1994a, page C25) and certain areas of habitat with most of these areas geographically linked by adjacent borders or corridors of suitable tortoise habitat. Populations of Mojave desert tortoises with densities below this density are in danger of extinction (USFWS 1994a, page 32). The revised recovery plan (USFWS 2011) designated five recovery units for the Mojave desert tortoise that are intended to conserve the genetic, behavioral, and morphological diversity necessary for the recovery of the entire listed species (Allison and McLuckie 2018).

Range-wide, densities of adult Mojave desert tortoises declined more than 32% between 2004 and 2014 (Table 1) (USFWS 2015). At the recovery unit level, between 2004 and 2014, densities of adult desert tortoises declined, on average, in every recovery unit except the Northeastern Mojave (Table 1). Adult densities in the Northeastern Mojave Recovery Unit increased 3.1% per year (SE = 4.3%), while the other four recovery units declined at different annual rates: Colorado Desert (–4.5%, SE = 2.8%), Upper Virgin River (–3.2%, SE = 2.0%), Eastern Mojave (–11.2%, SE = 5.0%), and Western Mojave (–7.1%, SE = 3.3%) (Allison and McLuckie 2018). However, the small area and low starting density of the tortoises in the Northeastern Mojave Recovery Unit (lowest density of all Recovery Units) resulted in a small overall increase in the number of adult tortoises by 2014 (Allison and McLuckie 2018). In contrast, the much larger areas of the Eastern Mojave, Western Mojave, and Colorado Desert recovery units, plus the higher estimated initial densities in these areas, explained much of the estimated total loss of adult tortoises since 2004 (Allison and McLuckie 2018).

At the population level, represented by tortoises in the TCAs, densities of 10 of 17 monitored populations of the Mojave desert tortoise declined from 26% to 64% and 11 have a density that is less than 3.9 adult tortoises per km² (USFWS 2015). The Fremont-Kramer population is near the Proposed Project and has a population below the minimum viable density, and an 11-year declining trend (–50.6%) (USFWS 2015).

Population Data on Mojave Desert Tortoise: The Mojave desert tortoise was listed as threatened under the FESA in 1990. The listing was warranted because of ongoing population declines throughout the range of the tortoise from multiple human-caused activities. Since the listing, the status of the species has changed. Population numbers (abundance) and densities continue to decline substantially (please see Tables 1 and 2).

Table 1. Summary of 10-year trend data for 5 Recovery Units and 17 Critical Habitat Units (CHU)/Tortoise Conservation Areas (TCA) for the Mojave desert tortoise, *Gopherus agassizii* (=Agassiz's desert tortoise). The table includes the area of each Recovery Unit and Critical Habitat Unit (CHU)/Tortoise Conservation Area (TCA), percent of total habitat for each Recovery Unit and Critical Habitat Unit/Tortoise Conservation Areas, density (number of breeding adults/km² and standard errors = SE), and the percent change in population density between 2004-2014. Populations below the viable level of 3.9 adults/km² (10 adults per mi²) (assumes a 1:1 sex ratio) and showing a decline from 2004 to 2014 are in red (Allison and McLuckie 2018, USFWS 2015).

Recovery Unit Designated Critical Habitat Unit/Tortoise Conservation Area	Surveyed area (km ²)	% of total habitat area in Recovery Unit & CHU/TCA	2014 density/km ² (SE)	% 10-year change (2004–2014)
Western Mojave, CA	6,294	24.51	2.8 (1.0)	–50.7 decline
Fremont-Kramer	2,347	9.14	2.6 (1.0)	–50.6 decline
Ord-Rodman	852	3.32	3.6 (1.4)	–56.5 decline
Superior-Cronese	3,094	12.05	2.4 (0.9)	–61.5 decline
Colorado Desert, CA	11,663	45.42	4.0 (1.4)	–36.25 decline
Chocolate Mtn AGR, CA	713	2.78	7.2 (2.8)	–29.77 decline
Chuckwalla, CA	2,818	10.97	3.3 (1.3)	–37.43 decline
Chemehuevi, CA	3,763	14.65	2.8 (1.1)	–64.70 decline
Fenner, CA	1,782	6.94	4.8 (1.9)	–52.86 decline
Joshua Tree, CA	1,152	4.49	3.7 (1.5)	+178.62 increase
Pinto Mtn, CA	508	1.98	2.4 (1.0)	–60.30 decline
Piute Valley, NV	927	3.61	5.3 (2.1)	+162.36 increase
Northeastern Mojave	4,160	16.2	4.5 (1.9)	+325.62 increase
Beaver Dam Slope, NV, UT, AZ	750	2.92	6.2 (2.4)	+370.33 increase
Coyote Spring, NV	960	3.74	4.0 (1.6)	+ 265.06 increase
Gold Butte, NV & AZ	1,607	6.26	2.7 (1.0)	+ 384.37 increase
Mormon Mesa, NV	844	3.29	6.4 (2.5)	+ 217.80 increase
Eastern Mojave, NV & CA	3,446	13.42	1.9 (0.7)	–67.26 decline
El Dorado Valley, NV	999	3.89	1.5 (0.6)	–61.14 decline
Ivanpah, CA	2,447	9.53	2.3 (0.9)	–56.05 decline
Upper Virgin River	115	0.45	15.3 (6.0)	–26.57 decline
Red Cliffs Desert	115	0.45	15.3 (6.0)	–26.57 decline
Total amount of land	25,678	100.00		–32.18 decline

Density of Juvenile Mojave Desert Tortoises: Survey results indicate that the proportion of juvenile desert tortoises has been decreasing in all five recovery units since 2007 (Allison and McLuckie 2018). The probability of encountering a juvenile tortoise was consistently lowest in the Western

Mojave Recovery Unit. Allison and McLuckie (2018) provided reasons for the decline in juvenile desert tortoises in all recovery units. These included decreased food availability for adult female tortoises resulting in reduced clutch size, decreased food availability resulting in increased mortality of juvenile tortoises, prey switching by coyotes from mammals to tortoises, and increased abundance of common ravens that typically prey on smaller desert tortoises.

Declining adult tortoise densities through 2014 have left the **Western Mojave** adult numbers at **49% (a 51% decline)** of their 2004 levels) (Allison and McLuckie 2018, USFWS 2015). Such steep declines in the density of adults are only sustainable if there are suitably large improvements in reproduction and juvenile growth and survival. However, the proportion of juveniles has not increased anywhere in the range of the Mojave desert tortoise since 2007, and in the **Western Mojave** Recovery Unit the proportion of juveniles in 2014 **declined to 91% (a 9 % decline)** of their representation since 2004 (Allison and McLuckie 2018).

The USFWS and Utah Division of Wildlife Resources have continued to collect density data on the Mojave desert tortoise since 2014. The results are provided in Table 2 along with the analysis USFWS (2015) conducted for tortoise density data from 2004 through 2014. These data show that adult tortoise densities in most Recovery Units continued to decline in density since the data collection methodology was initiated in 2004. In addition, in the Northeastern Mojave Recovery Unit that had shown an overall increase in tortoise density between 2004 and 2014, subsequent data indicate a decline in density since 2014 (USFWS 2016, 2018, 2019, 2020, 2022a, 2022b).

Table 2. Summary of trend data for Agassiz's desert tortoise, *Gopherus agassizii* (=Mojave desert tortoise).from 2004 to present for 5 Recovery Units and 17 Critical Habitat Units (CHU)/Tortoise Conservation Areas (TCA). The table includes the area of each Recovery Unit and CHU/TCA, percent of total habitat for each Recovery Unit and CHU/TCA, density (number of breeding adults/km² and standard errors = SE), and percent change in population density between 2004-2014 (USFWS 2015). Populations below the viable level of 3.9 breeding individuals/km² (10 breeding individuals per mi²) (assumes a 1:1 sex ratio) (USFWS 1994a, 2015) or showing a decline from 2004 to 2014 are in **red**.

Recovery Unit: Designated CHU/TCA &	% of total habitat area in Recovery Unit & CHU/TCA	2004 density/ km ²	2014 density/ km ² (SE)	% 10- year change (2004– 2014)	2015 density/ km ²	2016 density/ km ²	2017 density/ km ²	2018 density/ km ²	2019 density/ km ²	2020 density/ km ²	2021 density/ km ²
Western Mojave, CA	24.51	5.95	2.8 (1.0)	–50.7 decline							
Fremont- Kramer	9.14		2.6 (1.0)	–50.6 decline	4.5	No data	4.1	No data	2.7	1.7	No data
Ord-Rodman	3.32		3.6 (1.4)	–56.5 decline	No data	No data	3.9	2.5/3.4*	2.1/2.5*	No data	1.9/2.5*
Superior- Cronese	12.05		2.4 (0.9)	–61.5 decline	2.6	3.6	1.7	No data	1.9	No data	No data
Colorado Desert, CA	45.42	6.38- 7.86	4.0 (1.4)	–36.25 decline							
Chocolate Mtn AGR, CA	2.78		7.2 (2.8)	–29.77 decline	10.3	8.5	9.4	7.6	7.0	7.1	3.9
Chuckwalla, CA	10.97		3.3 (1.3)	–37.43 decline	No data	No data	4.3	No data	1.8	4.6	2.6
Chemehuevi, CA	14.65		2.8 (1.1)	–64.70 decline	No data	1.7	No data	2.9	No data	4.0	No data
Fenner, CA	6.94		4.8 (1.9)	–52.86 decline	No data	5.5	No data	6.0	2.8	No data	5.3
Joshua Tree, CA	4.49		3.7 (1.5)	+178.62 increase	No data	2.6	3.6	No data	3.1	3.9	No data

Recovery Unit: Designated CHU/TCA	% of total habitat area in Recovery Unit & CHU/TCA	2004 density/ km ²	2014 density/km ² (SE)	% 10- year change (2004– 2014)	2015	2016	2017	2018	2019	2020	2021
Pinto Mtn, CA	1.98		2.4 (1.0)	–60.30 decline	No data	2.1	2.3	No data	1.7	2.9	No data
Piute Valley, NV	3.61		5.3 (2.1)	+162.36 increase	No data	4.0	5.9	No data	No data	No data	3.9
Northeastern Mojave AZ, NV, & UT	16.2	2.15	4.5 (1.9)	+325.62 increase							
Beaver Dam Slope, NV, UT, & AZ	2.92		6.2 (2.4)	+370.33 increase	No data	5.6	1.3	5.1	2.0	No data	No data
Coyote Spring, NV	3.74		4.0 (1.6)	+ 265.06 increase	No data	4.2	No data	No data	3.2	No data	No data
Gold Butte, NV & AZ	6.26		2.7 (1.0)	+ 384.37 increase	No data	No data	1.9	2.3	No data	No data	2.4
Mormon Mesa, NV	3.29		6.4 (2.5)	+ 217.80 increase	No data	2.1	No data	3.6	No data	5.2	5.2
Eastern Mojave, NV & CA	13.42	5.54	1.9 (0.7)	–67.26 decline							
El Dorado Valley, NV	3.89		1.5 (0.6)	–61.14 decline	No data	2.7	5.6	No data	2.3	No data	No data
Ivanpah Valley, CA	9.53		2.3 (0.9)	–56.05 decline	1.9	No data	No data	3.7	2.6	No data	1.8

Recovery Unit: Designated CHU/TCA	% of total habitat area in Recovery Unit & CHU/TCA	2004 density/ km ²	2014 density/km ² (SE)	% 10- year change (2004– 2014)	2015	2016	2017	2018	2019	2020	2021
Upper Virgin River, UT & AZ	0.45	21.77	15.3 (6.0)	–26.57 decline							
Red Cliffs Desert**	0.45	29.1 (21.4– 39.6)**	15.3 (6.0)	–26.57 decline	15.0	No data	19.1	No data	17.2	No data	
Range-wide Area of CHUs - TCAs/Range- wide Change in Population Status	100.00			–32.18 decline							

*This density includes the adult tortoises translocated from the expansion of the MCAGCC, that is resident adult tortoises and translocated adult tortoises.

**Methodology for collecting density data initiated in 1999.

Abundance of Mojave Desert Tortoises: Allison and McLuckie (2018) noted that because the area available to tortoises (i.e., tortoise habitat and linkage areas between habitats) is decreasing, trends in tortoise density no longer capture the magnitude of decreases in abundance. Hence, they reported on the change in abundance or numbers of the Mojave desert tortoise in each recovery unit (Table 2). They noted that these estimates in abundance are likely higher than actual numbers of tortoises, and the changes in abundance (i.e., decrease in numbers) are likely lower than actual numbers because of their habitat calculation method. They used area estimates that removed only impervious surfaces created by development as cities in the desert expanded. They did not consider degradation and loss of habitat from other sources, such as the recent expansion of military operations (753.4 km² so far on Fort Irwin and the Marine Corps Air Ground Combat Center), intense or large scale fires (e.g., 576.2 km² of critical habitat that burned in 2005), development of utility-scale solar facilities (as of 2015, 194 km² have been permitted) (USFWS 2016), or other sources of degradation or loss of habitat (e.g., recreation, mining, grazing, infrastructure, etc.). Thus, the declines in abundance of Mojave desert tortoise are likely greater than those reported in Table 3.

Habitat Availability: Data on population density or abundance does not indicate population viability. The area of protected habitat or reserves for the subject species is a crucial part of the viability analysis along with data on density, abundance, and other population parameters. In the Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994a), the analysis of population viability included population density and size of reserves (i.e., areas managed for the desert tortoise) and population numbers (abundance) and size of reserves. The USFWS Recovery Plan reported that as population densities for the Mojave desert tortoise decline, reserve sizes must increase, and as population numbers (abundance) for the Mojave desert tortoise decline, reserve sizes must increase (USFWS 1994a). In 1994, reserve design (USFWS 1994a) and designation of critical habitat (USFWS 1994b) were based on the population viability analysis from numbers (abundance) and densities of populations of the Mojave desert tortoise in the early 1990s. Inherent in this analysis is that the lands be managed with reserve level protection (USFWS 1994a, page 36) or ecosystem protection as described in section 2(b) of the FESA, and that sources of mortality be reduced so recruitment exceeds mortality (that is, $\lambda > 1$) (USFWS 1994a, page C46).

Table 3. Estimated change in abundance of adult Mojave desert tortoises in each recovery unit between 2004 and 2014 (Allison and McLuckie 2018). Decreases in abundance are in red.

Recovery Unit	Modeled Habitat (km ²)	2004 Abundance	2014 Abundance	Change in Abundance	Percent Change in Abundance
Western Mojave	23,139	131,540	64,871	-66,668	-51%
Colorado Desert	18,024	103,675	66,097	-37,578	-36%
Northeastern Mojave	10,664	12,610	46,701	34,091	270%
Eastern Mojave	16,061	75,342	24,664	-50,679	-67%
Upper Virgin River	613	13,226	10,010	-3,216	-24%
Total	68,501	336,393	212,343	-124,050	-37%

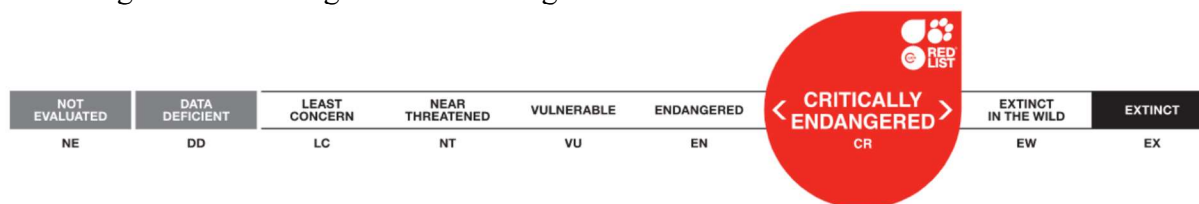
Habitat loss would also disrupt the prevailing population structure of this widely distributed species with geographically limited dispersal (isolation by resistance Dutcher et al. 2020). Allison and McLuckie (2018) anticipate an additional impact of this habitat loss/degradation is decreasing

resilience of local tortoise populations by reducing demographic connections to neighboring populations (Fahrig 2007). Military and commercial operations and infrastructure projects that reduce tortoise habitat in the desert are anticipated to continue (Allison and McLuckie 2018) as are other sources of habitat loss/degradation.

Allison and McLuckie (2018) reported that the life history of the Mojave desert tortoise puts it at greater risk from even slightly elevated adult mortality (Congdon et al. 1993; Doak et al. 1994), and recovery from population declines will require more than enhancing adult survivorship (Spencer et al. 2017). The negative population trends in most of the TCAs for the Mojave desert tortoise indicate that this species is on the path to extinction under current conditions (Allison and McLuckie 2018). They state that their results are a call to action to remove ongoing threats to tortoises from TCAs, and possibly to contemplate the role of human activities outside TCAs and their impact on tortoise populations inside them.

Densities, numbers, and habitat for the Mojave desert tortoise declined between 2004 and 2014 and densities continue to decline in most Recovery Units since 2014. As reported in the population viability analysis, to improve the status of the Mojave desert tortoise, reserves (area of protected habitat) must be established and managed. When densities of tortoises decline, the area of protected habitat must increase. When the abundance of tortoises declines, the area of protected habitat must increase. We note that the Desert Tortoise (Mojave Population) Recovery Plan was released in 1994 and its report on population viability and reserve design was reiterated in the 2011 Revised Recovery Plan as needing to be updated with current population data (USFWS 2011, p. 83). With lower population densities and abundance, a revised population viability analysis would show the need for greater areas of habitat to receive reserve level of management for the Mojave desert tortoise. In addition, we note that none of the recovery actions that are fundamental tenets of conservation biology has been implemented throughout most or all of the range of the Mojave desert tortoise.

IUCN Species Survival Commission: The Mojave desert tortoise is now on the list of the world's most endangered tortoises and freshwater turtles. It is in the top 50 species. The International Union for Conservation of Nature's (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers Mojave desert tortoise to be Critically Endangered (Berry et al. 2021). As such, it is a "species that possess an extremely high risk of extinction as a result of rapid population declines of 80 to more than 90 percent over the previous 10 years (or three generations), a current population size of fewer than 50 individuals, or other factors." It is one of three turtle and tortoise species in the United States to be critically endangered. This designation is more grave than endangered.



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Upgrade Listing from Threatened to Endangered

The Endangered Mojave Desert Tortoise

The Council believes that the Mojave desert tortoise meets the definition of an endangered species. In the **FESA**, Congress defined an “endangered species” as “any species which is in danger of extinction throughout all or a significant portion of its range...” In the **CESA**, the California legislature defined an “endangered species” as a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant, which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes (California Fish and Game Code §

2062). Because most of the populations of the Mojave desert tortoise were non-viable in 2014, most are declining, and the threats to the Mojave desert tortoise are numerous and have not been substantially reduced throughout the species' range, the Council believes the Mojave desert tortoise should be designated as an endangered species by the **USFWS** and **CDFW**.

Mojave desert tortoise is now on the list of the world's most endangered tortoises and freshwater turtles. It is in the top 50 species. The **International Union for Conservation of Nature's (IUCN)** Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers Mojave desert tortoise to be Critically Endangered (**Turtle Conservation Coalition 2018**). It is one of three turtle and tortoise species in the United States to be critically endangered.

The summary of data above indicates that BLM's current management actions for the Mojave desert tortoise are inadequate to help recover the desert tortoise. BLM has been ineffective in halting population declines, which has resulted in non-viable populations. The Council believes that these management actions are inadequate in preventing the extirpation of the Mojave desert tortoise in California.

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