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Via BLM NEPA ePlanning portal and email

July 29, 2026
April Rabuck, Acting District Manager
Keenan Murray
Arizona Strip District Office
Attn: ASDO Oil and Gas Feb 2027 Lease Sale
4001 E. Aviator Drive
St. George, UT 84790
blm_az_asdo_nepa_comments@blm.gov

RE: February 2027 2026 Oil and Gas Lease Sale 30-Day Scoping Period – BLM Arizona Strip (DOI-BLM-AZ-A000-2026-0007-EA)

Dear Ms. Rabuck and Mr. Murray,

The Desert Tortoise Council (Council) is a non-profit organization comprising 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 northern 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.

Both our physical and email addresses are provided above in our letterhead for your use when providing future correspondence to us. When given a choice, we prefer to receive emails for future correspondence, as mail delivered via the U.S. Postal Service may take several days to be delivered. Email is an "environmentally friendlier way" of receiving correspondence and documents rather than "snail mail."

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed project in habitats potentially occupied by the Mojave desert tortoise (*Gopherus agassizii*) (synonymous with Agassiz's desert tortoise), our comments include recommendations intended to enhance protection of this species and its habitat during activities that may be authorized by the Bureau of Land Management (BLM), which we recommend be

added to project terms and conditions in the authorizing documents [e.g., lease, issuance of right-of-way (ROW) grant, management plan and decision document, etc.] as appropriate. Please accept, carefully review, and include in the relevant project file the Council's following comments for the proposed action.

The Mojave desert tortoise is among the top 50 species on the list of the world's most endangered tortoises and freshwater turtles. 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), "… based on population reduction (decreasing density), habitat loss of over 80% over three generations (90 years), including past reductions and predicted future declines, as well as the effects of disease (upper respiratory tract disease/mycoplasmosis). *Gopherus agassizii* (sensu stricto) comprises tortoises in the most well-studied 30% of the larger range; this portion of the original range has seen the most human impacts and is where the largest past population losses have been documented. A recent rigorous rangewide population reassessment of *G. agassizii* (sensu stricto) has demonstrated continued adult population and density declines of about 90% over three generations (two in the past and one ongoing) in four of the five *G. agassizii* recovery units and inadequate recruitment with decreasing percentages of juveniles in all five recovery units."

This status, in part, prompted the DTC to join Defenders of Wildlife and the Desert Tortoise Preserve Committee (DTPC) to petition the California Fish and Game Commission (Commission) in March 2020 to elevate the listing of the Mojave desert tortoise from Threatened to Endangered under the California Endangered Species Act (CESA) (Defenders of Wildlife et al. 2020). Importantly, following California Department of Fish and Wildlife's (CDFW) (2024a) status review, in their April 2024 meeting the California Fish and Game Commission voted unanimously to accept the CDFW's petition evaluation and recommendation to uplist the tortoise from threatened to endangered under the CESA based on the scientific data provided on the species' status, declining trend, numerous threats, and lack of effective recovery implementation and land management (CDFW 2024b). On July 15, 2025, the tortoise was officially uplisted to endangered status under the CESA (Commission 2025).

Description of the Proposed Action

In the Arizona Strip District, BLM has opened a 30-day public scoping period to receive public input on oil and gas parcels totaling 208,576 acres (Proposed Action). BLM provided the following information under "Description of the Project" on its National Environmental Policy Act (NEPA) Register[1]:

> "The Bureau of Land Management (BLM) has opened a 30-day public scoping period to receive public input on 92 oil and gas parcels totaling 208,576 acres that may be included in a February 2027 lease sale in Arizona. The scoping period ends July 29, 2026. Leasing is the first step in the process to develop federal oil and gas resources. Before development operations can begin, an operator must submit an application for permit to drill detailing development plans. The BLM reviews applications for permits to drill, posts them for public review, conducts environmental analysis and coordinates with state partners and stakeholders. All

[1] https://eplanning.blm.gov/Project-Home/?id=c5f10790-8349-f111-88b4-001dd8084607

> parcels that are included in a federal oil and gas lease sale include appropriate stipulations to protect important natural resources. Information on current and upcoming BLM leases are available through the National Fluid Lease Sale System. BLM lease sales are held online through Efficient Markets."

BLM provided additional information under "What's New:"

> "These parcels were nominated in September and October of 2025 and are distinct from the 40 parcels which may be offered for sale in December 2026.
>
> The BLM conducted a separate 30-day public scoping period from May 12 to June 11, 2026, for 40 oil and gas parcels totaling 78,708 acres that may be offered in a December 2026 lease sale. An environmental assessment will be undertaken to evaluate both the 92 parcels (208,576 acres) and the 40 parcels (78,708 acres)."

We found no information on the BLM NEPA Register on the term of the lease sale. However, according to an earlier news release by BLM (April 28, 2026), "oil and gas leases are awarded for a term of 10 years and as long thereafter as there is production of oil and gas in paying quantities." Hence, the life of the proposed lease sale and associated construction, operation, and maintenance of the wells and other facilities and activities associated with development would be a minimum of 10 years, or possibly longer.

BLM provided a map with the locations of the 92 oil and gas parcels and the 40 oil and gas parcels (Figure 1) that BLM is proposing to lease and a list of the parcels with a legal description of their locations (township, range, and section).

According to the BLM map, the parcels are located from the Arizona-Utah border south for about 35 miles in Mohave County, Arizona. The parcels are south of the cities of St. George and Washington, the Warner Valley, and Fort Pearce in Utah. They include several washes such as Mokaac, Dutchman, and Fort Pearce washes, which flow toward the north or northwest into Utah and the Virgin River from some of the identified oil and gas parcels available for lease in Arizona. The parcels extend south, close to/abutting the Grand Canyon-Parashant National Monument managed by the National Park Service (NPS) and BLM.

Scoping Comments on the Proposed Action

BLM notified the Council of the public scoping period for the Proposed Action on June 29, 2026. The Council appreciates BLM's notification. We request that such notifications continue for all BLM proposed actions that may affect the tortoise or its habitat including habitat needed for connectivity. The Council's comments are intended to help BLM ascertain the depth and complexity of potential impacts to the tortoise and its habitat from the Proposed Action and the December 2026 Arizona Strip Oil and Gas Lease Sale (https://eplanning.blm.gov/Project-Home/?id=c5f10790-8349-f111-88b4-001dd8084607).

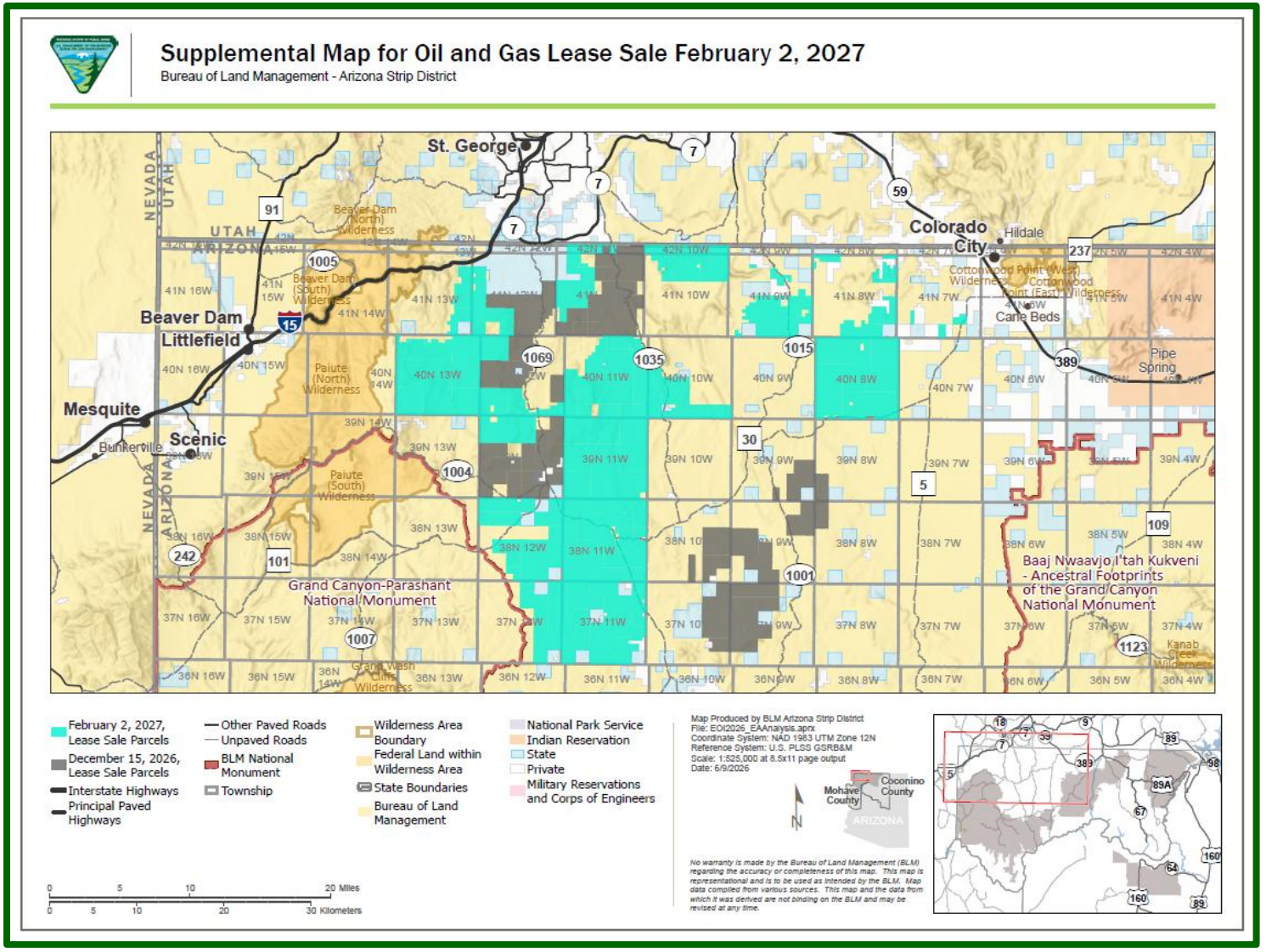


Figure 1. Locations of 92 oil & gas lease sale parcels (February 2027 = green) and 40 oil & gas lease sale parcels (December 2026 = dark gray). Arizona Strip District, Bureau of Land Management, Mojave County, AZ.

The Desert Tortoise Council is a Stakeholder

The Council is advising BLM that it is a stakeholder in the management of public lands on the Arizona Strip District of BLM. The Council has and continues to be an active participant in projects that BLM is proposing that are likely to affect the tortoise/tortoise habitat on the Arizona Strip, other BLM districts in Arizona in which the Mojave desert tortoise and Sonoran desert tortoise (*G. morafkai*) occur, and other BLM districts in Utah, California, and Nevada in which the Mojave desert tortoise occurs. For example, for the area of the Arizona Strip District/Grand Canyon Parashant National Monument, the Council provided comments on BLM's December 2026 Oil and Gas Lease Sale, Big Bend Irrigation Ditch and Access Roads Rights-of-Way, Tassi-Gold Butte Herd Management Area Wild Burro Gather Plan, Link Spring & Last Chance Allotments Grazing Permit Renewals, Sullivan Spring Water Development, Land Health Evaluation for Cedar Pockets (AZ04866) and Highway West (AZ04812) Allotments, and Pakoon Springs Public Use Environmental Assessment. Since 2018, the Council has provided 148 comment letters on BLM-proposed actions that would affect one or both species of tortoises/tortoise habitats, and since 1976, the Council has submitted numerous comment letters on BLM-proposed actions affecting desert tortoises.

The mission of the Council is "to assure the perpetual survival of viable populations of desert tortoises represented throughout their historical ranges." The first two purposes of the Federal Endangered Species Act (FESA) are "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species." Under FESA, Congress imposed a policy to BLM "to conserve endangered species and threatened Species" and "utilize their authorities in furtherance of the purposes of this Act." Because the mission of the Council is closely aligned with Congress's directive to BLM under FESA, we believe that makes us a stakeholder in working with BLM to ensure that the purposes and policy that Congress mandated of BLM under FESA for threatened and endangered species, including the tortoise, would be effectively implemented. This involvement would include any proposed action that may affect the tortoise.

BLM's Proposed Action, if implemented, would likely have adverse effects on public-owned resources/public trust natural resources. These include the tortoise and tortoise habitat. Consequently, the Council requests that BLM recognize the Council as a stakeholder for the Proposed Action.

Limited Information Provided on the Proposed Action

According to the Department of the Interior's (DOI) Handbook of National Environmental Policy Act Implementing Procedures (NEPA Handbook) (DOI 2026), "scoping may be used for an environmental assessment to identify issues that warrant assessment and issues that do not warrant assessment. Scoping should begin as soon as practicable after the proposal for action is sufficiently developed for consideration."

BLM provided limited information on the Proposed Action. Information provided on BLM's NEPA register was limited to "lease land for oil and gas development." We assert this limited information does not comply with the requirement that the proposal for action has been "sufficiently developed for consideration." We are unsure what "development" means. We

presume it means to extract these resources, and that they would be transported via pipeline or truck to another location to be processed. We presume oil and gas development may include activities such as surface exploration; exploratory drilling; oil field development; and facility construction including access roads, well pads, offices; storage areas for equipment, chemicals, and hazardous materials; potable water storage and water wells; and maintenance facilities for vehicles and equipment. It may also include other activities such as distribution facilities.

No information was provided on the locations of the wells, other facilities, roads, etc., likely areas of surface disturbance, or methods used for exploration or to extract (e.g., fracking) oil or natural gas. Because of the absence of information in BLM's "Description of the Project" regarding the methods and facilities that would be needed to develop the oil and gas, including the locations of roads, the Council must presume a worst case scenario when identifying likely threats to the tortoise, tortoise habitat, and other special status species.

Location of Proposed Action in the Range of the Tortoise and Tortoise Habitat

From the information BLM provided in their NEPA planning website for this Proposed Action under "Description of the Project," several of the northern parcels are located in tortoise habitat in the Arizona Analytical Unit of the Upper Virgin River Recovery Unit (USFWS 2021), while parcels located farther south are at higher elevations above the typical range of elevations for tortoises in the northeast portion of the species' range. However, the equipment and vehicles used to develop the southern parcels would likely be transported from southern Utah south through tortoise habitat to reach these higher elevation parcels outside of tortoise habitat on new or improved roads. Most roads in this part of the Arizona Strip are 4-wheel-drive roads. It is likely that wherever BLM leases parcels for development of oil and gas, even if not in tortoise habitat, new or improved roads to access southern parcels would be in tortoise habitat. Consequently, the Proposed Action would likely impact desert tortoises/tortoise habitat. Currently, a tortoise population is located in the southern part of Zion National Park (Thoma and Shovic 2013) near Springdale at an elevation of about 4,000 feet (ft). This is the northeastern extent of their documented range. Tortoises at Zion National Park occur in a juniper-dominated vegetation community (USFWS 2021). Deep burrows are constructed under large sandstone boulders (UDWR 2000).

In the Revised Recovery Plan for the Mojave Population of the Desert Tortoise (USFWS 2011), the U.S. Fish and Wildlife Service (USFWS) stated that "typical habitat for the desert tortoise in the Mojave Desert has been characterized as creosote bush scrub below 1,677 meters (5,500 feet)." Nussear et al. (2009) modeled the probability of tortoise habitat. When applied to the 99,537-acre Arizona Analytical Unit (AU) for the tortoise, there are 86,894 acres of modelled suitable habitat in this AU (USFWS 2021). Much of the vegetation of the northern parcels identified for oil and gas development is creosote-blackbrush vegetation, which is a vegetation association occupied/used by tortoises. The elevations, tortoise habitat model, and vegetation association where the northern parcels are located all indicate that these areas are tortoise habitat and likely occupied/used by tortoises. These areas include Big Valley east to Fort Pearce Wash and south between the 4,000-ft and 5,500-ft elevation.

The Arizona AU has tortoise habitat continuing north into Washington County, Utah. It also includes tortoise habitat extending west that "may provide linkages between Utah and Arizona tortoises in the Upper Virgin River Recovery Unit, as well as linkages between the Upper Virgin River Recovery Unit and the Northeastern Mojave Recovery Unit" (USFWS 2021). This continuity of populations and potential connectivity across recovery units make the Arizona AU ecologically important as described below.

In addition, several washes drain from south to north (Arizona to Utah) in Big Valley and east of this valley into Utah and the Virgin River. Washes are used by tortoises as foraging areas and as travel corridors. Desert tortoises tend to follow washes (Jennings 1993, Peaden et al. 2017) and choose washes in which to forage especially in late spring (Jennings and Berry 2023). Thus, any surface disturbance of these washes would, in addition to loss of foraging habitat and locations to construct burrows, would adversely impact their ability to move throughout their home ranges affecting foraging behavior and breeding behavior. Please see "Impacts to Tortoise/Tortoise Habitat" below for additional information on impacts to the tortoise from implementation of the Proposed Action.

Implement Tortoise Presence-Absence Survey Protocol

Because some identified parcels for oil and gas leases are in tortoise habitat and likely occupied by tortoises, we request that BLM require that USFWS's pre-project survey protocol (USFWS 2019a) be conducted to determine presence-absence of the tortoise in the action area (as defined in 50 Code of Federal Regulations (CFR) 402.2), and report the results in the NEPA document for the Proposed Action.

The USFWS's (2019a) presence-absence survey protocol for the tortoise identifies the area to be surveyed as the "action area." This follows the requirements for preparation of a biological assessment. The "action area" is defined in 50 CFR 402.2 and the USFWS Desert Tortoise Field Manual (USFWS 2009) as "all areas to be affected directly or indirectly by proposed development and not merely the immediate area involved in the action." BLM should coordinate with the USFWS to determine the boundary of the action area. Below we provide information on likely impacts to the tortoise/tortoise habitat from implementation of the Proposed Action that BLM and USFWS should consider when delineating the action area.

If tortoises or tortoise sign are found during presence-absence surveys (USFWS 2019a), formal Section 7 consultation would be initiated, and ultimately BLM would require that clearance surveys following the USFWS's protocol (USFWS 2019b) be conducted immediately prior to authorized surface disturbance. Tortoises should be relocated and monitored if these surveys occur during the active season. If development occurs during inactive periods, the USFWS should be contacted for the appropriate approach to relocation.

Alternatives Analyzed

BLM should analyze alternatives that have the least amount of surface disturbance, use the least amount of water, and avoid or minimize the use of hazardous materials. If more than one entity is awarded a lease, they should be required to consolidate their development facilities. One or more alternatives that BLM analyzes should avoid surface disturbance in tortoise habitat by using methods such as directional drilling to explore for and extract oil and gas. The locations and use of new roads or improvement to BLM open roads for oil and gas development should be consolidated as much as possible.

Compliance with the Federal Land Policy and Management Act (FLPMA)
Under FLPMA, Congress directed that "the public lands be managed in a manner that . . . will provide food and habitat for fish and wildlife." Congress defined the principle or major uses of public lands "as limited to domestic livestock grazing, fish and wildlife development and utilization, mineral exploration and production, rights-of-way, outdoor recreation, and timber production."

In addition, FLPMA requires BLM "take any action necessary to prevent unnecessary or undue degradation of the lands."

In the NEPA document, BLM should show the results of the analysis of all impacts to wildlife including the tortoise. BLM should compare this analysis of impacts with how the terms and conditions of the lease agreement would ***effectively*** (emphasis added) avoid, minimize, and/or compensate for these impacts so there is no undue degradation to the lands, including to tortoise habitat. Please see our comments below under "Mitigation" for suggestions on terms and conditions that would help BLM comply with FLPMA requirement of no undue degradation of the lands.

Compliance with the Federal Endangered Species Act (FESA)
In this statute, Congress requires all federal agencies. including BLM, (1) to seek to conserve endangered and threatened species and use applicable authorities in furtherance of the purposes of this Act, and (2) to avoid jeopardizing the continued existence of any species listed or proposed for listing as threatened or endangered. This would include the tortoise.

In the NEPA document, BLM should analyze how the Proposed Action, the December 2026 Arizona Strip Oil and Gas Lease Sale, and existing and proposed developments and human activities will affect the survival and recovery of the tortoise in the Upper Virgin River Recovery Unit. Survival and recovery includes connectivity within and among tortoises/tortoise populations in this recovery unit, and connectivity between tortoises in the Upper Virgin River and Northeastern Mojave Recovery Units. We mention the Upper Virgin River Recovery Unit because for the tortoise to meet recovery objectives and criteria, the tortoises in each recovery unit must meet recovery objectives and criteria. If tortoises in one recovery unit are unable to meet recovery objectives and criteria, the tortoise cannot be recovered/conserved (USFWS 2011). If a proposed action would preclude the tortoise in a recovery unit from being able to attain recovery objectives and criteria, then the proposed action would jeopardize the continued existence of the tortoise. This is because "jeopardize the continued existence of" is defined as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02).

If BLM desires to ensure that the Proposed Action will not jeopardize the continued existence of the tortoise/will not meet recovery objectives and criteria, the description of the Proposed Action must include effective measures that would avoid, minimize, and/or compensate for the impacts to the tortoise/tortoise habitat. This is because actions identified in a NEPA document as mitigation that are not part of the description of the proposed action are not mandated to be implemented under NEPA. Thus, BLM should ensure that the description of the Proposed Action includes measures to effectively avoid, minimize, and/or compensate adverse impacts to the tortoise/tortoise habitat.

BLM should include in the NEPA document under the description of the Proposed Action all reasonable and prudent measures and terms and conditions for the tortoise stated in the biological opinion, which was issued to BLM in 2007 by USFWS for the Arizona Strip Resource Management Plan (RMP). These would include:

- All individuals handling tortoises must meet the USFWS desert tortoise monitor or authorized biologist qualifications requirements;
- A biological monitor will be assigned each activity within the project site requiring large equipment. A biological monitor will also be assigned to all backfilling, recontouring, and reclamation activities;
- For drilling activities, where technically and economically feasible, use directional drilling, or horizontal, or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in occupied desert tortoise habitat;
- Authorized activities will require monitoring of the desert tortoise population throughout the duration of the project. The appropriate level of monitoring will be developed in coordination with the BLM and USFWS;
- Limit access to existing routes and avoid creating new ones;
- Powerlines will be minimized and if built, include anti-perching mechanisms to discourage raptors and corvids. Monitoring of such use may be necessary;
- Powerline alignment should be kept within existing utility corridors;
- BLM shall take measures to minimize incidental take from recreational activities and travel;
- No standing water as a result of project operations will be permitted.

Following completion of formal section 7 consultation for the Proposed Action, BLM should include in the NEPA document under the description of the Proposed Action all reasonable and prudent measures and terms and conditions for the tortoise stated in the biological opinion that USFWS will issue to BLM for the Proposed Action. In addition, BLM should include in the NEPA document the Conservation Recommendations for the tortoise from the 2007 biological opinion for the tortoise and from the biological opinion USFWS issues for the Proposed Action. For each conservation recommendation BLM should explain what BLM is doing to implement each recommendation. For any conservation recommendation that BLM is not implementing, BLM should explain in the NEPA document why it is not implementing that conservation recommendation given BLM's mandate under section 7(a)(1) of the FESA, and BLM's Special Status Species Management policy (see below).

Compliance with BLM Policies

BLM should demonstrate in the NEPA document how they are implementing their policies with respect to the conservation of the tortoise, specifically:

- Bureau of Land Management. 2015. Advancing Science in the BLM: An Implementation Strategy IB 2015-040
- Bureau of Land Management. 2022. Habitat Connectivity on Public Lands Instruction Memorandum 2023-005
- Bureau of Land Management. 2024. Special Status Species Management. Handbook 6840. Washington, D.C. September 9, 2024.
- Bureau of Land Management, 2016. Travel and Transportation Management. Manual 1626. Washington, D.C. September 27, 2016.

BLM Policy – Advancing Science: BLM is directed in other documents and this policy to use science in its decision-making processes. In NEPA, Congress declared that federal agencies shall "[u]tilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences . . . in planning and in decisionmaking." To comply with this requirement, the NEPA document should have used the latest information from scientific journals and reports on the demographic status of the tortoise; the needs of the tortoise for its survival and recovery in the Upper Virgin River Recovery Unit and rangewide; and how the direct, indirect, interactive, synergistic, and cumulative impacts of the action alternatives would affect the future survival and recovery of the tortoise in this Recovery Unit, connectivity to the Northeastern Mojave Recovery Unit, and range-wide. This analysis and any conclusions stated in the NEPA document regarding the tortoise should be supported with citations from the scientific literature rather than by unsupported conclusions. BLM's "Advancing Science in the BLM: An Implementation Strategy IB 2015-040" (BLM 2015) reinforces the need to use science in decisionmaking. Please ensure the NEPA document demonstrates compliance with this BLM policy especially with respect to analysis, conclusions, and decisions made concerning the tortoise.

BLM Policy – Habitat Connectivity: Under this policy, BLM is directed "to ensure habitat connectivity, permeability and resilience is restored, maintained, improved, and/or conserved on public lands" (BLM 2022). "BLM state offices will work with state and Tribal wildlife managers as well as other stakeholders to assess data regarding connectivity, permeability, and resilience and, based on that assessment, identify where to focus management that best supports priority species." BLM "offices are also encouraged to work with a diverse scientific field of experts to expand research on habitat connectivity on public lands to best inform the assessment of habitat connectivity." "Consistent with BLM's inventory obligations and authority for important resource values (as provided for in Section 201(a) of FLPMA)[1], and to help guide where best to focus management of connectivity, the BLM will assess public lands for habitat connectivity and identify areas of habitat connectivity, which are habitats on BLM administered public lands that support or facilitate priority species movements and other ecological processes, such as seed dispersal, migrations, and stopover sites."

To help maintain tortoise residency and permeability across all other non-conservation-designated tortoise habitat, Averill-Murray et al. (2021) recommended that all surface disturbance should be "limited to less than 5-percent development per square kilometer because the 5-percent threshold for development is the point at which tortoise occupation drops precipitously (Carter and others 2020a)." They cautioned that the upper threshold of five percent development per square kilometer may not maintain population sizes needed for demographic or functional connectivity; therefore, development thresholds should be lower than five percent.

When analyzing whether a project/proposed action may impact areas on the landscape used/needed by tortoises, BLM should include that the lifetime home range for the Mojave desert tortoise is more than 1.5 square miles (3.9 square kilometers) (Berry 1986) and that tortoises may make periodic forays of more than seven miles (11 kilometers) at a time (Berry 1986).

The connectivity between the Upper Virgin River and Northeastern Mojave Recovery Units appears to be highly limited. Two locations have been identified using habitat modeling (Averill-Murray et al. 2021). The northern linkage habitat that may provide connectivity extends west from the Red Cliffs Desert Conservation Area through a pass in the Beaver Dam Mountains. However, much of this area near St. George and Santa Clara has been developed creating edge effects that may substantially compromise connectivity via this northern linkage habitat. The southern linkage

habitat is from Arizona near Big Valley southwest along the edge of the Virgin Mountains into Nevada. The southern linkage may be adversely impacted at a minimum through edge effects from the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale. However, this impact may be far greater. Until BLM provides information on the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale such as location and extent of surface disturbance, types of human activities, and duration of these activities associated with the Proposed Action, we do not know if sufficient areas of tortoise habitat, unimpacted by edge effects, will remain for tortoises to use for connectivity within the populations in the Arizona AU and Upper Virgin River Recovery Unit.

The supplementary map that BLM provided (Figure 1) (and we appreciate that BLM provided a map with the locations of both the December 2026 and February 2027 Arizona Strip Oil and Gas Lease Sales on one map) shows a contiguous group of parcels beginning at the south side of Interstate 15 and extending south for about 35 miles. The configuration of these identified parcels when leased for oil and gas exploration/development would isolate tortoises and tortoise habitat on the east side of the group of parcels from the west side. Thus, it would potentially block connectivity of tortoises across the southern half of the Upper Virgin River Recovery Unit. It would also potentially block the southern linkage between the Upper Virgin River Recovery Unit and the Northeastern Mojave Recovery Unit.

BLM should analyze in the NEPA document how the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale proposed oil and gas exploration and development would comply with BLM's policy on Habitat Connectivity and FLPMA. Specifically, the issues are connectivity within the Upper Virgin River Recovery Unit for the tortoises located on southwest Utah and northwest Arizona and connectivity between the Upper Virgin River Recovery Unit and the Northeastern Mojave Recovery Unit. The importance of habitat connectivity within a recovery unit and between recovery units was identified in USFWS's Revised Recovery Plan for the Mojave Population of the Desert Tortoise (USFWS 2011). Since then, the needs of habitat connectivity for the tortoise have been analyzed in several scientific papers including Averill-Murray et al. (2021).

BLM should demonstrate that it has:

- used existing geospatial data on tortoise habitat (e.g., Nussear et al. 2009) for these two recovery units;
- overlaid existing geospatial data of past and present development/surface disturbance;
- indicated the spatial extent of the indirect impacts (that extend beyond the project footprint) of this development according to Beier et al. (2008), Beier (2018), Carter et al. (2020), Averill-Murray et al. (2021), and others;
- overlaid the Proposed Action including the exploration, development, maintenance, and transport of oil and gas and associated infrastructure (e.g., roads, pipelines, etc.) in the Arizona Strip; and
- overlaid the extent of all impacts from the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale.

These geospatial layers would indicate whether any habitat for the tortoise would remain, and if so, whether the configuration of the tortoise habitat would be sufficient to provide connectivity across the southern part of the Upper Virgin River Recovery Unit and between the Upper Virgin River and Northeastern Mojave Recovery Units. This information and analysis should be reported in the NEPA document to demonstrate compliance with FLPMA and this policy as well as analysis under FESA in the biological assessment.

BLM Policy – Special Status Species Management: BLM states, "[t]his policy establishes an agencywide emphasis on proactive, landscape- and ecosystem-level, scientifically informed conservation and recovery of special status species and their habitats." BLM identified five objectives:

- Focus on Proactive Conservation and Recovery for Special Status Species;
- Use FESA Section 7(a)(2) Consultation to Support Conservation and Recovery;
- Promote Healthy Species Populations and Biodiversity through Landscape- and Ecosystem-Level Management – including promoting ecosystem resilience and landscape intactness, including habitat connectivity especially with regard to climate change;
- Use Science and Adaptive Management to Advance Conservation and Recovery; and
- Engage Stakeholders through Internal and External Involvement.

For the first objective, BLM should demonstrate in the NEPA document how implementation of the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale is not hindering the conservation and recovery of the tortoise in the Upper Virgin River Recovery Unit.

For the second objective, BLM should explain in the NEPA document how it is complying with Section (7)(a)(2) of the Federal Endangered Species Act (FESA) for species and designated critical habitat, including the desert tortoise, that may be affected directly or indirectly by any phase of the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale. Section 7(a)(2) of the FESA requires federal agencies to consult with the USFWS on any action that they fund, authorize, or carry out that may affect the desert tortoise. The effects of the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale include direct, indirect, interrelated, and/or interdependent effects under FESA. Under NEPA, ***all impacts*** [emphasis added] are to be analyzed (DOI 2026). In the biological opinion for the Arizona Strip RMP, USFWS (2007) states "We will not consider this level of incidental take to be exceeded as long as all conservation measures included in this opinion are followed and ***individual site-specific consultations are completed*** [emphasis added].

For the third objective, BLM should demonstrate how it has (1) analyzed and incorporated habitat connectivity for the tortoise and other special status species in the analysis of impacts for the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale; and (2) developed appropriate mitigation to offset these impacts and ensure that habitat connectivity is maintained. Habitat connectivity is necessary to support demographically viable populations and long-term gene flow for the tortoise and crucial to achieve recovery of the tortoise. This is especially important in the Upper Virgin River Recovery Unit, which is the smallest recovery unit in geographic area and tortoise abundance. Also, habitat connectivity between recovery units for the tortoise is necessary for its survival and recovery (Averill-Murray et al. 2021).

In analyzing habitat connectivity for the tortoise, Averill-Murray et al. (2021) stated, "Ignoring minor or temporary disturbance on the landscape could result in a cumulatively large impact that is not explicitly acknowledged (Goble 2009); therefore, understanding and quantifying all surface disturbance on a given landscape is prudent." The authors found that effective linkage habitats are not long narrow corridors." Rather, "low-mobility species, such as the desert tortoise, are considered "corridor dwellers" that may spend their entire life within corridors (Beier and Loe 1992). In effect, low mobility of the species means that interconnected local populations of tortoises must persist across the landscape to ensure overall species persistence (Averill-Murray et

al. 2021). In addition, any development within or adjacent to them has an edge effect (i.e., indirect impact) that extends from all sides into the linkage habitat further narrowing or impeding the use of the linkage habitat, depending on the extent of the edge effect – again demonstrating the importance of analyzing indirect impacts to the tortoise from implementation of all phases of the Proposed Action. Please see additional information on this issue under "BLM Policy – Habitat Connectivity."

For the fourth objective, the BLM should explain how it analyzed impacts for all alternatives using the best available science for direct, indirect, interconnected, synergistic, and cumulative impacts of the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale, and used this information to develop effective mitigation for the tortoise and other listed species that would be affected by these impacts from implementation of all phases of the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale.

For the fifth objective, BLM should describe the scoping actions it has implemented for the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale and the comments received from interested parties.

BLM Policy – Travel and Transportation Management: The primary objective of this policy is to "establish a long-term, sustainable, multimodal travel network and transportation system of areas, roads, primitive roads, trails and other transportation linear features that address the need for public, authorized, and administrative access to and across BLM-managed lands" (BLM 2016a).

BLM finalized the Arizona Strip Travel and Transportation Management Plan (TTM Plan) in 2018. In reviewing the map of routes for this TTM Plan, few or no routes are shown in some of the parcels available for lease under the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale. For parcels in tortoise habitat, the absence or low density of routes, and therefore absence of the myriad of adverse impacts associated with the presence and use of roads, should be maintained as much as possible. As stated in the biological opinion for the Arizona Strip RMP (USFWS 2007), "Limit new access routes created by the project."

Averill-Murray and Allison (2023) reported that for road densities, including all linear features used for travel (including ROWs), managers should "apply a maximum road density of 0.6 km/km^2 to areas predominately containing lower-probability tortoise habitat (e.g., probability values of less than 0.6) or less than 0.6 km/km^2 as a general target for travel management in areas where wildlife conservation is a priority" and "further reduce road densities in higher-probability habitats." The reason for this maximum density threshold is because the authors reported that the density above this resulted in declining populations of tortoises. The probability habitat values refers to the habitat values reported by Nussear et al. (2009) for the tortoise.

Consequently, BLM should include (1) the specific locations of where new routes, if any, would be authorized under the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale, (2) whether there would be restrictions placed on these new routes (i.e., implementation of section 6.4 Closures and Restrictions in the Travel and Transportation Management Manual (BLM 2016a) as authorized under special rules (43 CFR 8341.2) and (43 CFR 8364.1)) to minimize numerous adverse impacts to the tortoise from the presence and use of roads, and (3) enforcement and monitoring that would be implemented including effective monitoring of incidental take.

In reviewing the routes currently approved for use under the TTM Plan, some areas in tortoise habitat appear to exceed the 0.6 km/km^2 maximum threshold (Averill-Murray and Allison 2023). We presume that if new routes would be authorized, BLM would amend the existing TTM Plan. When amending this TTM Plan, BLM should explain in the NEPA document for the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale whether there are areas of tortoise habitat with route densities that exceed this maximum threshold for tortoise. If there are areas, BLM should explain the actions it is implementing to reduce the route density to a level below this threshold so the impacts are not resulting in declining tortoise populations (i.e., population survival).

Compliance with Arizona Strip Resource Management Plan (RMP)
This RMP was approved by BLM in 2008. Appendix G of this RMP contains oil and gas lease stipulations for the entire Arizona Strip District. BLM should confirm that all stipulations will be implemented and enforced including those for soils, the tortoise, and other special status species. In addition, BLM should confirm that the reasonable and prudent measures and terms and conditions for the tortoise in the biological opinion issued by the USFWS on November 7, 2007 for the Arizona Strip RMP will be implemented and enforced. Please refer to the section of this letter on "Compliance with the Federal Endangered Species Act (FESA)" for additional comments and requirements under the biological opinion issued for the RMP.

We were disappointed that in the RMP the stipulations for soils appear to be limited to minimizing erosion. We found no mention of management for other physical properties (e.g., changes in compaction, organic matter, etc.), chemical properties (e.g., soil moisture content, etc.), and biological properties (e.g., soil crusts, arbuscular mycorrhizal fungi (AMF), etc.) of soils. For compaction, there should be a discussion on how compaction affects the chemical and biological properties of soils. After severe disturbance, desert soils require long periods to recover naturally (Chiquoine et al. 2016). For example, for biological soil crusts, Belnap (2001) reported recovery rates ranging from 14 to 50 years depending on the species comprising the soil crust. Chiquoine et al. (2016) reported that for soil crusts composed of lichens or mosses, recovery time is several decades to centuries depending on the availability of the propagules. Because vegetation depends on healthy functioning soils, Abella (2010) reported recovery of vegetation lost from surface disturbance would take 200 years, and disturbances can leave scars in the desert visible for multiple human generations. Consequently, it is economically and ecologically expedient to avoid impacts to desert soils, and when not possible, to minimize impacts if BLM is to ensure that the actions it authorizes do not result in undue degradation of the lands.

In the NEPA document for the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale, BLM should explain the impacts that would occur to soils from implementation of the Proposed Action and the December 2026 Arizona Oil and Gas Lease Sale and the stipulations that BLM will require of the lessees to ensure there is no undue degradation of the lands. The public should not have to wait 14 to 50 years or longer for biological soil crusts to be restored or 200 years for vegetation to be restored.

We were also disappointed that the stipulations for surface waters appear to be limited to perennial waters. In a desert ecosystem, washes, gullies, and rills, and the vegetation associated with them, attest to the importance of precipitation in the desert ecosystem (Miller et al. 2008) and the

importance of desert washes to wildlife including the tortoise. Please see our comments above under "Location of Proposed Action in the Range of the Tortoise and Tortoise Habitat" about the importance of washes for tortoises.

In the 19 years since the biological opinion was issued to BLM for the Arizona Strip RMP (USFWS 2007), the demographic status of the tortoise has declined substantially in the Upper Virgin River Recovery Unit, the Northeastern Mojave Recovery Unit, and rangewide (when comparing rangewide monitoring reports by USFWS available since 2007 and earlier and Utah Division of Wildlife Resources (UDWR) survey reports for the Upper Virgin River Recovery Unit available since 2007 and earlier). In addition, research has expanded knowledge on the effects of human activities on tortoises and tortoise habitat such as presence and use of roads; the maximum threshold of raven densities above which tortoises will not maintain stable population because the juvenile tortoise mortality exceeds recruitment, the relationship between invasive plant species, roads, and surface disturbance; invasive plants species and the nutrition, water balance, reproduction, and survival of tortoises; invasive plants species and increased fuel load to carry wildfires; habitat fragmentation, and connectivity on population survival. In 2021 the USFWS issued a "Biological Report for the Upper Virgin River Recovery Unit population of Mojave desert tortoise (*Gopherus agassizii*)" analyzing the importance of the Arizona AU on the survival and recovery of the tortoise.

Since the biological opinion was issued in 2007 and the RMP approved in 2008, new research on tortoises/tortoise populations and their habitats indicates additional adverse impacts from the presence, density, and use of roads. These include:

- Nafus et al. (2013) reported that roads decrease tortoise populations via several possible mechanisms, including cumulative mortality from vehicle collisions and reduced population growth rates from the loss of larger reproductive animals;
- Peaden (2017) modeled a tortoise population with no road effect zone, introduced a road with no exclusion fencing, installed exclusion fencing, and augmented the tortoise population. His results were that roads result in an immediate and lasting impact to tortoise population abundance, fencing halts further declines but does not result in an increase in tortoise abundance for some time, and augmentation has minimal impacts on increasing tortoise abundance. Thus, the most effective management is not allowing the construction of new roads in tortoise habitat;
- The density of all routes is a major threat to the survival and recovery of the tortoise (Berry et al. 2014, Tuma et al. 2016, Averill-Murray and Allison 2023). Averill-Murray and Allison (2023) stress the importance of identifying the entire travel network within management areas and setting limits for road density in areas managed for the tortoise/tortoise habitat including habitat for connectivity;
- Averill-Murray and Allison (2023) provide a case study on the Mojave desert tortoise from the impacts of road use and stress identifying the entire travel network within management areas and setting limits for road density with lower road densities in areas with greater tortoise numbers;
- Harju et al. (2024) reported that when female tortoises were nearer to a road, they were more likely to switch to and stay within a more energy demanding movement state. This switch would result in the expenditure of additional energy. The tortoise does not have

energy reserves in the form of abundant nutritious forage available in its habitat. This expenditure of energy may make less energy available for reproduction and survival;

- nitrogen deposition from vehicle exhaust that encourages the growth of non-native invasive plant species (Rao et al. 2009, Allen et al. 2009, and others);
- modifications to surface hydrology and surface flow to vegetation communities downgradient of roads caused by roads decoupling drainages (Devitt et al. 2022) resulting in significant decline in soil moisture, canopy level NDVI (Normalized Difference Vegetation Index) values, and mid-day leaf xylem water potentials. Schwinning et al. (2011) stated that the overall health of desert ecosystems is directly linked to the integrity of their surfaces and such ephemeral drainage systems;
- new and repeated surface disturbance functions as a key ecological switch that transitions healthy arid ecosystems to cheatgrass invaded systems (Molvar et al. 2024). Surface disturbance from the construction and maintenance of new roads and ongoing use by vehicles under the 10-year lease would facilitate the continual transport of seeds of invasive non-native annual grasses through tortoise habitat in the Arizona Strip with the disturbance from road use providing an environment for continual re-establishment and spread;
- collection of water during precipitation events and deposition of the water at the edge of the road. This increased amount of water promotes the growth of non-native invasive plant species near the roadway for its entire length;
- road systems increase risk of human-caused fire. In contrast, areas that are distant from roads have significantly less human-ignited fires (Morrison 2007). Morrison (2007) reported that 88% of all wildfires nationwide are caused by humans. Of these human-caused wildfires, 95% occurred within ½ mile of a road. Human-caused wildfires occur much more commonly next to roads than would be predicted by random occurrence across the landscape. Consequently, road access is a significant contributing factor to the probability of occurrence of wildfires. These results were statistically significant;
- road-related threats contributed ~22% of the total impacts to the Mojave desert tortoise in an aspatial conceptual model of risk to the species, not including effects of population fragmentation (Darst et al. 2013, Averill-Murray and Allison 2023).

Regarding demographic data, the density of adult tortoises in the Upper Virgin River Recovery Unit was reported as 29.7 tortoise per km^2 in 1999 and 13.7 per km^2 in 2025 (UDWR 2026). For the Northeastern Mojave Recovery Unit, the density of tortoises was reported as 2.4 adult tortoises per km^2 in 2001 (USFWS 2011). In 2024 the density of adult tortoises in the Beaver Dam Slope Tortoise Conservation Area (TCA) was 1.7 tortoises per km^2 (USFWS 2025) and for the Gold Butte Pakoon TCA, the density was 2.4 tortoises per km^2 in 2021 (USFWS 2022). These two TCAs are along the east side of the Northeastern Mojave Recovery Unit, which is immediately west of and abuts the Upper Virgin River Recovery Unit. With a density of 3.4 adult tortoises per km^2 with an equal male to female sex ratio as the minimum density for population viability for the tortoise (USFWS 1994), the demographic data indicate that in the two TCAs in the eastern part of the Northeastern Mojave Recovery Unit have adult population densities below the threshold of population viability; population density has not improved or has declined in density since 2001. For the Upper Virgin River Recovery Unit, the population density for the tortoise has declined by more than 55 percent and shows an overall downward trend since 2000 (UDWR 2026).

In this USFWS report, 12 analytical units were identified using existing natural and anthropomorphic barriers to movement of tortoises. The Arizona Analytical Unit was third in the area of tortoise habitat present (using the Nussear et al. (2009) tortoise habitat probability model), exceeded only by Zone 3 in the Red Cliffs National Conservation Area, and Green Valley Analytical Unit. The Arizona AU was ranked third in importance (among the 12 AUs analyzed) in its resiliency contribution to the Upper Virgin River Recovery Unit) and second in population abundance exceeded only by Zone 3 in the Red Cliffs National Conservation Area.

In complying with the requirements in this biological opinion (part of this document is provided in Appendix A of the RMP), BLM should initiate consultation with the USFWS for the Proposed Action. This information and other relevant results from recent research on the tortoise/tortoise habitat should be included as part of the analysis of the Proposed Action and December 2026 Arizona Strip Oil and Gas Lease Sale in the NEPA document and the biological assessment.

Impacts to the Tortoise/Tortoise Habitat

In DOI's National Environmental Policy Act Implementing Regulations – Final Rule (91 *Federal Register* (36) 8738-8762), DOI states, "NEPA does not contain any provisions addressing any specific type of environmental impact." Nor does NEPA limit the specific type of environmental impacts to be included in the analysis. When examining the definition of "environmental effect" (or environmental impact) in NEPA, Congress did not define it in this statute. The dictionary defines "environmental effect" as "the effect that the activities of people and businesses have on the environment." Because Congress did not limit environmental impacts to one or a few types of impacts in the statute, BLM should analyze all environmental impacts to the tortoise and other special status species in the NEPA document.

Consequently, in the NEPA document BLM should describe and analyze all impacts (i.e., direct, indirect, interactive, synergistic, and cumulative impacts) that are likely to occur to the tortoise from the Proposed Action and the December 2026 Arizona Strip Oil and Gas Lease Sale. This description and analysis would encompass an area larger than the footprint of the Proposed Action and the December 2026 Arizona Strip Oil and Gas Lease Sale. For example, the road effect zone should be included in the action area for the tortoise for implementing presence-absence surveys, and analysis of the numerous adverse impacts of roads to the tortoise should be analyzed in the NEPA document and biological assessment.

The impacts to the tortoise would include:

- direct mortality or injury of tortoises from the use of vehicles and equipment;
- direct mortality from the construction and maintenance of new roads and increased maintenance of existing roads;
- construction of pits, holes, and trenches, resulting in entrapment of tortoises;
- surface disturbance that results in loss of tortoise forage and cover and promotes proliferation of non-native invasive plant species (Brooks and Berry 2006) via construction equipment, vehicles, and other sources;
- loss of habitat through removal of native vegetation and destruction of native seed banks;
- soil compaction that inhibits the establishment of new plants;
- unintentional ongoing transport and/or spread of non-native invasive seeds along roads;

- collecting and directing water from precipitation to the road's shoulder or low side that stimulates growth of non-native invasive plants along the road (Gelbard and Belnap 2003, Boarman and Sazaki 2006);
- nitrogen deposition from vehicle and equipment exhaust that encourages the growth of non-native invasive plant species (Rao et al. 2009, Allen et al. 2009);
- surface water quality (that affects soil moisture and growth of native vegetation), soils, and vegetation located down-gradient and down-wind from exploration and drilling sites from the transport of toxic elements and compounds via wind and precipitation events that are released during exploration and drilling activities;
- ingestion (geophagy and lithophagy), inhalation, surface contact, and foraging on plants contaminated from increased releases of toxic compounds into the environment from exploration and drilling activities where plants and animals including the tortoise would be exposed to them, ingest them, and be harmed by them;
- mortality or injury from increased traffic on roads to and in the area of the Proposed Action, expanding the "road effect zone" and associated mortality, adverse effects to tortoise behavior and physiology caused by the presence of roads (Harju et al. 2024, Henen 2002, Hromada et al. 2020, Hromada et al. 2023, Peaden 2017, Peaden et al. 2017);
- noise and vibration from the operation of equipment and commercial vehicles that cause tortoises to leave their burrows (Medica et al. 1986) exposing them to predation and temperature extremes;
- increased opportunities for unauthorized collection for pets and vandalism (Lovich and Bainbridge 1998, Berry et al. 2020);
- predation from increased numbers of coyotes that utilize human subsidies of food and water (Richter et al. 2024), and ravens that utilize human subsidies of food, water, roosting, perching, and nesting locations (Boarman 2003) including fossorial animals exposed during surface disturbance as a food source for tortoise predators;
- increased competition of non-native invasive plant species with native plants species;
- replacement of native forbs that have high nutritional and water value with non-native invasive grasses that have low nutritional and water value resulting in malnutrition, associated diseases (Drake et al. 2016) and decreased reproductive output (Henen 2002) for tortoises;
- production of fugitive or anthropomorphic dust that impedes growth and reproduction of native plants (Eller 1977, Farmer 1993, Sharifi et al. 1997, Thompson et al. 1984, and Wijayratne et al. 2005) and buries soil crusts killing the cyanobacteria and green algae (Belnap 2002) that affects tortoises by reducing the quantity and quality of available forage and availability of cover from predators and thermal extremes;
- increased occurrence of size, intensity, and frequency of human-caused and lightning-caused wildfires from fuels provided by non-native invasive plant species (Brooks and Esque 2002);
- habitat fragmentation and reduced population connectivity/ isolation of tortoise populations; and
- any other impacts to the tortoise/tortoise habitat that may occur from the implementation of the Proposed Action and the December 2026 Arizona Strip Oil and Gas Lease Sale because of the absence of information on the Proposed Action and the December 2026 Arizona Strip Oil and Gas Lease Sale.

Road construction and use and projects that result in surface disturbance and/or human use contribute to fragmentation of tortoise populations. Fragmentation occurs when surface disturbance or land use divides large blocks of habitat into smaller blocks. Habitat fragmentation increases the probability that isolated or small populations will suffer irreversible declines (i.e., extirpation) due to genetic, demographic, and/or environmental stochastic effects acting on their smaller local abundances, especially when combined with other external threats (Averill-Murray et al. 2021).

Genetic stochasticity or genetic drift is the probabilistic change in gene frequency in a population. It may cause gene variants to disappear completely and thereby reduce genetic variation. Small, fragmented populations are particularly vulnerable to the negative effects of genetic drift, including inbreeding depression, loss of genetic diversity, and increased susceptibility to environmental stressors.

Demographic stochasticity is the random fluctuation in population size caused by the probabilistic nature of individual birth and death events. Each individual has a probability of dying and a probability, each year, of finding a mate and producing offspring. Demographic stochasticity can have a large negative effect on the persistence of a small population.

Environmental stochasticity is the effect of random environmental fluctuations (habitat, weather, other external factors) on the growth rate of a population. Examples of environmental stochastic events for the tortoise are fire, drought, or high temperatures.

Roads are an example of a human activity that causes fragmentation of tortoise populations and loss of habitat connectivity. Road densities have a negative relationship to tortoise densities, that is, with increasing density of all roads including trails and rights-of way in an area the density of tortoises declines (Averill-Murray and Allison 2023). However, they are not the only example of human activity that causes fragmentation to tortoise populations.

The northern and western parcels identified by BLM in combination with the parcels identified in the December 2026 Oil and Gas Lease Sale (Figure 1 in this letter) form a continuous linear block of land that may be developed. The locations of these parcels extend from I-15 south for about 35 miles through tortoise habitat to higher elevation areas. If the parcels in tortoise habitat are developed, this development, in combination with I-15 creating a permanent barrier to tortoise movement to the north and development in the St. George, Utah area, would likely isolate the tortoises south of I-15 and east of the proposed oil and gas development parcels. This combination of human activities would fragment the tortoise population south of I-15 creating a small isolated population east of the parcels. Because elevations increase to the south and east and do not contain tortoise habitat, this isolated population at the northeastern edge of the range of the tortoise would likely be extirpated in the future. The fragmentation of tortoise populations in the Upper Virgin River Recovery Unit would also likely remove the southern connection to the Northeastern Mojave Recovery Unit leaving only the northern connection which is already threatened by human development on the west and northwest sides of St. George (please see information provided under "BLM Policy – Habitat Connectivity"). BLM should describe and analyze the fragmentation of tortoises in the Upper Virgin River Recovery Unit and connectivity with the Northeastern Mojave Recovery Unit in the NEPA document.

Cumulative impacts should include the status and trend of the tortoise in the Upper Virgin River Recovery Unit, especially with respect to past, present, and future proposed actions/projects, and how these actions/projects with the Proposed Action would affect the long-term survival and recovery of the tortoise in this recovery unit and rangewide.

Impacts to Other Special Status Species and Their Habitats

In addition to the tortoise, BLM should conduct a similar analysis for special status species. A subset of special status species are those listed or proposed for listing under FESA. They include California condor (*Gymnogyps californianus*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), Virgin River chub [*Gila seminuda* (= *robusta*)], woundfin (*Plagopterus argentissimus*), Monarch butterfly (*Danaus plexippus*), Suckley's cuckoo bumble bee (*Bombus suckleyi*), and several plants. While the southwestern willow flycatcher, yellow-billed cuckoo, Virgin River chub, and woundfin are riparian or aquatic species, the Proposed Action may use large amounts of ground water in making drilling muds or for injection that drops the water table and reduces the flows of the Virgin River. Hazardous materials used in the "development" of oil and gas, which BLM did not define, may be carried downstream in washes that terminate at the Virgin River or may leach into sub-surface or ground water and adversely affect water quality in the Virgin River. These actions would result in reduced surface flows reducing the availability of habitat for aquatic and riparian habitat species and directly affect the Virgin River chub and woundfin from exposure to hazardous materials. The Proposed Action area and most of Washington County, Utah are in U.S. Environmental Protection Agency's and U.S. Geological Survey's Hydrologic Unit Code HUC 04:1501[2] and Virgin River Groundwater Basin and Surface Watershed[3].

Because of the location of the Proposed Action on the Arizona-Utah border, with the hydrologic surface flow from Arizona north to Utah and the Virgin River and the groundwater hydrologic unit in northwestern Arizona that extends north into Washington County, UT, the special status species analyzed in the NEPA document should include relevant species on the BLM Arizona List and BLM Utah List for species in this hydrologic unit/watershed area that rely on water quality and quantity from surface and groundwater sources.

Protection of Natural Resources

BLM stated that, "All parcels that are included in a federal oil and gas lease sale include appropriate stipulations to protect important natural resources**."** We presume that the tortoise and its habitat are important natural resources that BLM would protect. We conclude this because of Congress's directives to BLM in FESA, especially in section 7(a)(1) of the statute. Under section 7(a)(1) of FESA, Congress directed all federal agencies to " . . . utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to Section 4 of this Act." In Section 3 of the FESA, "conserve," "conserving," and "conservation" mean "to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition…" "[A]t which the measures provided pursuant to this Act are no longer necessary" means recovery of the species.

[2] https://www.epa.gov/waterdata/get-nhdplus-national-hydrography-dataset-plus-data
[3] https://www.azwater.gov/sites/default/files/2022-12/watershed_gwBasins.pdf

Mitigation

FLPMA directs BLM to manage public lands that consider the long-term needs of future generations for renewable and non-renewable resources, and to take any action necessary to prevent unnecessary or undue degradation of the lands. To comply with FLPMA, BLM should require the implementation of actions that avoid adverse impacts, minimize remaining adverse impacts, compensate residual impacts that remain after implementing avoidance and minimization actions, and restore the ecological functions degraded or lost from the development of the Proposed Action that were present during pre-project conditions with no time limitation on cessation of restoration actions. BLM should require the lessees to post bonds to fund the effective restoration of the ecological functions and for compensation. BLM should review the amounts of these bonds annually to ensure they are adequate to cover fully the costs of restoring all ecological functions including increased costs from inflation and other factors and completing the implementation of compensation actions. In addition, the mitigation should be part of the description of the Proposed Action so the mitigation is presented as mandatory under NEPA.

Mitigation for the tortoise would include standard avoidance and minimization measures including mitigation plans to minimize adverse impacts (See recent BLM environmental impact statements on solar energy development in Nevada or California) and the Desert Renewable Energy Conservation Plan (BLM 2016b) that amended the California Desert Conservation Area Plan. We say "include" because the focus of most of these measures is on avoiding direct take of tortoises even though the indirect impacts to tortoises result in a greater loss of tortoise abundance.

Restoration of all areas adversely impacted by implementation of the Proposed Action should be required. The restoration standard should be to restore areas to pre-project conditions regardless of the time required. This mitigation measure needs to comply with FLPMA.

Soils are the foundation of any restoration effort. The NEPA document should discuss and analyze the effectiveness of mitigation that would be implemented such as topsoil removal, storage, and reuse; implementation of identified measures to eliminate water and wind erosion; inoculation of soils with soil crusts and AMF (Hernandez et al. 2023), etc. Please include this discussion and analysis in the NEPA document.

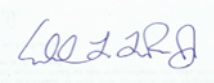
We strongly advise coordinating with the Desert Tortoise Recovery Office to determine the appropriate mitigation to first avoid impacts to the tortoise/tortoise habitat, second minimize impacts, and then compensate for the remaining direct, indirect, interactive, synergistic, and cumulative adverse impacts. A good starting point for minimizing direct and some indirect impacts to the tortoise is "A Compilation of Frequently Implemented Best Management Practices to Protect Mojave Desert Tortoise during Implementation of Federal Actions" (https://deserttortoise.org/wp-content/uploads/dtc_construction_BMPs_090517.pdf), the fact sheets the Council developed on Restoring Perennial Plants, Enhancing Forage, Salvaging Topsoil, Rehabilitating Severe Disturbance, and Reducing Impacts of Roads (https://deserttortoise.org/library/plans-bmps/).

We appreciate this opportunity to provide the above comments and trust they will help protect tortoises during any resulting authorized activities. Herein, we reiterate that the Council wants to be identified as an Affected Interest/External Stakeholder for this and all other projects funded, authorized, or carried out by the BLM that may affect desert tortoises, and that any subsequent environmental documentation for this project is provided to us at the contact information listed above. Additionally, we ask that you notify the Council at eac@deserttortoise.org of any proposed

projects that the BLM may authorize, fund, or carry out in the range of any species of desert tortoise in the southwestern United States (i.e., *Gopherus agassizii*, *G. morafkai*, *G. berlandieri*, *G. flavomarginatus*) so we may comment on them to ensure the BLM fully considers and implements actions to conserve these tortoises as part of its directive to conserve special status species under BLM's Special Status Species Management Policy.

Please 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 this Project.

Respectfully,



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