**DESERT TORTOISE COUNCIL**
4654 East Avenue S #257B
Palmdale, California 93552
www.deserttortoise.org
eac@deserttortoise.org

**Via email only**

27 February 2019

Ms. Sarah Webster
Bureau of Land Management, Barstow Field Office
2601 Barstow Road, Barstow, California 92311
swebster@blm.gov

RE: Comments on the Kern River Gas Transmission Company Pesticide Use Proposal for Operations and Maintenance Activities (DOI-BLM-CA-D080-2019-0008-EA)

Dear Ms. Webster,

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 project in habitats likely occupied by the Mojave population of Agassiz's desert tortoise (*Gopherus agassizii*) (synonymous with "Mojave desert tortoise"), our comments pertain to enhancing protection of this species during activities authorized by the Bureau of Land Management (BLM).

**Description of Proposed Action**

The BLM's proposed action is "for the continued use of: chlorsulfuron and sulfometuron (as found in Landmark XP®1) and bromacil (as found in Krovar 1 DF®) within [Kern River] fenced facilities;" "the use of glyphosate (as found in Roundup PRO® Concentrate) along the pipeline ROW[right-of-way], which is the only BLM approved chemical allowed for use within desert tortoise habitat (i.e., outside of Kern River's fenced facilities);" and the "approval of the use of two additional herbicides under the renewed PUP [pesticide use permit]: OUST® XP (sulformeturon) and Milestone® (aminopyralid), which will only be used within fenced facilities."

We commend BLM and Kern River Gas Transmission Company (Kern River) for implementing actions to control the occurrence and spread of non-native plant species in the range of the Mojave desert tortoise and for taking an Integrated Pest Management (IPM) approach. While this Environmental Assessment (EA) focuses on the use of herbicides as one tool in the IPM approach, we urge BLM to consider the use of other tools such as directed energy (https://media.defense.gov/2018/Mar/06/2001886655/-1/-1/1/GLOBALNEIGHBOR_AF121-207%20(CONCEPT).PDF. We support the continued use of effective methods to control/eliminate non-native plant species on public lands managed by the BLM provided they do not adversely affect the survival and recovery of the Mojave desert tortoise and other native species.

**Availability of Documents Incorporated by Reference in the Environmental Assessment**

In the EA, the BLM frequently refers to its 2015 *Environmental Assessment for Kern River Gas Transmission Company Pesticide Use Permit for Operations and Maintenance Activities* (DOI-BLM-CAD-08000-2015-0061–EA, Barstow Field Office, Barstow, California) to provide information on past descriptions of actions and analyses of environmental effects for some of the herbicides. Although we searched online for this document, we were unable to find it. Because this 2015 EA was not available online, we have no information on the analysis of effects and adequacy of the mitigation measures to avoid/minimize these effects to the Mojave desert tortoise. Consequently, some of our comments that follow may have been addressed by this document.

We request that when the BLM is incorporating by reference descriptions of actions and analysis of effects, the public should have online access to that referenced document(s). The BLM should make their 2015 EA available online for the public to refer to during the 30-day comment period on the 2018 EA. Other documents referred to by BLM were available online (e.g., BLM 2007. *Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States, 2*016. *Final Programmatic Environmental Impact Statement for Vegetation Treatments Using Aminopyralid, Fluroxypyr, and Rimsulfuron on Bureau of Land Management Lands in 17 Western States, 2016*).

**Effectiveness Monitoring**

To demonstrate the continued need for and effectiveness of herbicide use within the Kern River ROW in California, we request the BLM provide the results of monitoring its effectiveness. The results of annual or seasonal monitoring should include information on the locations and extent of non-native plant species, and the effectiveness of the herbicides used to control the introduction and spread of each species. Certain herbicides may be better at controlling non-native species than others. Currently, we are especially concerned about the introduction and spread of Sahara mustard (*Brassica tournefortii*), London rocket (*Sisymbrium irio*), Russian thistle (*Salsola tragus*), and brome species (*Bromus* ssp.).

Over time, some non-native plant species may develop resistance to the herbicide(s) used and their application is then minimally effective or ineffective. In addition, the composition of non-native plant species may change, and this change may require the use of different tools to be effective, including the use of different herbicides. Thus, the monitoring data and analysis will provide valuable information on the effectiveness of the control of non-native plant species in the ROW, and whether other measures may be needed to ensure the success of controlling the introduction, persistence, and spread of non-native plant species.

These monitoring results may help us understand why there is a need to add two herbicides, OUST® XP (sulformeturon) and Milestone® (aminopyralid), to those already used within the ROW. Perhaps they are needed because the herbicides previously used have become less effective? We request that this information be included in the Decision Record.

**Use of Glyphosate**

We have several concerns about the use of glyphosate in desert tortoise habitat. First, we are unsure if the BLM is allowing the use of only the brand name herbicide Roundup PRO® Concentrate or any herbicide that contains the active ingredient glyphosate. Durkin (2011) notes there are "more than 50 formulations of glyphosate." Our interpretation of the wording in the EA is that any herbicide with the active ingredient glyphosate may be used on the ROW. We request that in the Decision Record the BLM clarify whether any herbicide with glyphosate may be used or only Roundup PRO® Concentrate may be used.

Second, the degradation rate of glyphosate is several months. For example, the soil degradation half-life of Roundup Pro is up to 174 days. If this brand name herbicide is used annually, it is unlikely to have fully degraded before the next year's application. This may result in a dosage of herbicide greater than recommended by the label and may exceed the acute and chronic toxicity levels for non-target wildlife species. If other glyphosate herbicides are used, their degradation rates may be longer or shorter depending on the additives to the herbicide.

Our third concern is the additives in an herbicide. A brand name herbicide has active ingredient(s) and inert or other ingredients. The active ingredient(s) is/are the herbicide that is responsible for the weed management activity (e.g., glyphosate). "The inert ingredients are included in the formulation as solvents that may improve the active ingredient's ability to move through the leaf surface, to improve the shelf-life of the formulation, to reduce the degradation of the active ingredient, or to provide a color to the formulation." It is important to note that the term "inert" does not imply that the ingredients that make up this portion of the formulation are nontoxic (BLM 2015).

In addition, an herbicide application may contain adjuvants, surfactants, and degradates. "There are obvious, and in many cases substantial, differences among the toxicities of technical grade glyphosate, glyphosate formulations that do not contain a surfactant, and some glyphosate formulations that contain polyoxyethyleneamine surfactants" (Durkin 2011). Unless one knows the concentration of glyphosate and the other ingredients, it is difficult to determine the toxicity of the formulated herbicide on a taxon of wildlife let alone a single species such as the Mojave desert tortoise.

We note that "other herbicides may also factor into the risk estimates, as many herbicides can be tank-mixed to expand the level of control and to accomplish multiple identified tasks" (BLM 2015). The EA mentions that "tank mix will be used." We are unsure whether this wording means two or more herbicides will be mixed and applied, or only one brand name herbicide will be used but its granular form will be mixed with a liquid in a tank for a spray application. We request that BLM clarify this terminology in the Decision Record. If it is the former, we request that BLM provide an analysis of whether the adverse effects of the tank mix of herbicides are additive or synergistic and describe impacts to the Mojave desert tortoise and its habitats, particularly designated critical habitat.

Our fourth concern is we found no literature on the ecological risk analysis of glyphosate being tested on tortoises. Rather, the U.S. Environmental Protection Agency's (USEPA) requires testing on surrogate species. Typically, for vertebrate species, this means mammals, birds, and fish representing feeding guilds for other domesticated animals and wildlife. The study methods required by the USEPA are based on a relatively narrow set of studies on a relatively small subset of species (Durkin 2011). The USEPA does not require standard toxicity studies on terrestrial reptiles. "Very few laboratory studies have been conducted using reptiles or amphibians. Therefore, data specific to the adverse effects of a chemical species of these taxa are often unavailable" (BLM 2015). Birds are used as surrogate species for reptiles even though their morphology, physiology, and behavior are very different. Surrogate bird species are usually limited to an omnivorous terrestrial species (bobwhite quail) and a wetland herbivorous species (mallard). For aminopyralid, the surrogate species for the Mojave desert tortoise was the Canada goose (BLM 2015, p. 6-14).

The risk characterization of many wildlife species is further constrained by the lack of field studies involving exposure of these species to applications of one or several herbicides. Many risk characterizations are based on laboratory studies of acute exposure and modeled estimates of acute exposure for surrogate species. These acute exposure studies did not always include the range of concentrations allowed on the labels and methods of application. Frequently exposure studies did not include acute exposures to juvenile life stages, including larvae and embryos. Studies frequently looked at observed changes in behavior or morphology of adults in the laboratory. Few studies looked at changes at the cellular, tissue, organ, or system levels. Recently the USEPA has been considering the effects of herbicides as endocrine disruptors, a consideration that would apply to vertebrate species including the Mojave desert tortoise.

Chronic risks of herbicides are not well studied. However, we have general information about the persistence of herbicides in the environment. Herbicides degrade over time. How long an herbicide persists depends on several factors including light, temperature, and soil moisture. Herbicides dissipate via several pathways including photo-degradation, chemical degradation, microbial degradation, leaching, and volatilization (Altland 2015). Given that the degradation rate of glyphosate is several months, chronic risks of persistent herbicides should be studied and included in any risk analysis for the Mojave desert tortoise.

Because available data are limited with respect to effects on reptiles and tortoises, specifically the Mojave desert tortoise, the analysis of effects to the desert tortoise from acute and chronic exposure to herbicides in the project area and nearby has been artificially constrained and is

based on a series of assumptions. This level of uncertainty should trigger a requirement to monitor any change or adverse effect in the physiology, morphology, genetics, or reproduction of desert tortoises in/near areas where herbicides are used to determine if these assumption-based conclusions are correct. We request that BLM include such a monitoring plan for the Mojave desert tortoise in the Decision Record and implement it only after receiving feedback from knowledgeable experts.

Fifth, results from research conducted after 2015 by scientists indicate glyphosate causes adverse physiological effects to mammals, birds, reptiles, and amphibians (Gill et al. 2018, Landrigan and Belppoggi 2018, Leveroni et al. 2017, Myers et al. 2016, and Tarazona et al. 2017). In 2018, the USEPA issued a draft human health and ecological risk assessments for glyphosate. Given the recent concerns and studies that show that glyphosate is more toxic than originally reported, we urge the BLM to conduct an ecological risk assessment of its acute and chronic effects on an appropriate surrogate species that represents the physiology, morphology, genetics, and reproduction of the desert tortoise. The ecological risk assessment should include a review of all research available in the scientific literature on the effects of glyphosate on appropriate surrogate species for the desert tortoise including those from international sources.

**Section 7 Consultation**

Based on this recent information, we recommend that the BLM reinitiate consultation with the U.S. Fish and Wildlife Service (USFWS) on the use of herbicides containing glyphosate (e.g., Roundup, etc.) in desert tortoise habitats, and particularly designated critical habitat. Reinitiation is required when discretionary Federal involvement or control over the action has been retained or is authorized by law and if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered.

We presume the BLM has initiated or completed consultation with the USFWS for the use of the two new herbicides in the Kern River ROW. We believe consultation is needed because herbicides applied following the manufacturer's directions may have adverse impacts beyond the area receiving direct treatment. There are several pathways by which the desert tortoise may be indirectly exposed to herbicides. These include off-site drift of spray to terrestrial areas, surface runoff from the application area to off-site soils, wind erosion resulting in deposition of contaminated dust (BLM 2015), ingestion of vegetation and/or soils with herbicide residues. Although BLM is confining the application of OUST® XP and Milestone® that contain sulfometuron and aminopyralid to inside the fenced areas, these herbicides may adversely affect biota outside the fenced areas including the desert tortoise and tortoise habitat. We request that BLM complete consultation with the USFWS for the use of these two new herbicides before applying them.

Based on the information the BLM provided in the EA, we believe that section 7 consultation with the USFWS may not have been completed for the use of glyphosate or a brand name herbicide containing glyphosate in the Kern River ROW. In the EA, BLM states: "Per Kern River's Biological Opinion (BO), formal consultation for impacts on desert tortoise, including invasive plant management for the Kern River pipeline system and associated laterals, was completed with the issuance of the BO. The USFWS issued the BO on September 28, 2011; the

BO reviews potential adverse effects to the Mojave desert tortoise based on the current status of the desert tortoise, the environmental baseline for the action area, the effects of the proposed actions, and the cumulative effects. The USFWS concluded that routine operations and maintenance activities are likely not to jeopardize the continued existence of the threatened desert tortoise, given Kern River abides by the stipulations and guidance described in the BO."

After reading the 2011 BO, we found no mention of the use of glyphosate, Roundup, or any other herbicide in the Description of the Proposed Action section and no analysis of effects of glyphosate or Roundup to the tortoise or its habitat/critical habitat in the Effects of the Action section. We conclude that glyphosate or brand name herbicides containing glyphosate as an active ingredient were not analyzed in this BO. Unless the BLM has recently completed formal consultation with the USFWS on the use of glyphosate in the range of the Mojave desert tortoise, we suggest that BLM reinitiate consultation given the new information on its adverse effects, and recent information on the declining status and trend of the desert tortoise (see Allison and McLuckie 2018). Reinitiation is required if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered.

**Specific Comments**

Page 17 - Under No Action Alternative, BLM states "Manual or mechanical treatment of invasive plants would still occur, where necessary." However, the Proposed Action and Environmental Consequences sections describe/discuss only manual and chemical treatment methods. Use of mechanical methods is not described/analyzed in the EA. Consequently, we recommend that mechanical treatment be removed from the Decision Record for consistency and clarity, or alternatively, that the Decision Record adequately analyze the effects of mechanical removal. If mechanical removal is to be implemented, it is essential that qualified biologists observe all such activities to avoid take of tortoises.

Page 28 Special Status Species - The only species mentioned in this section is the Mojave desert tortoise. In a previous section (3.4 Vegetation and Noxious/Invasive Plants), the BLM refers to Rusby's Rose Mallow (*Sphaeralcea rusbyi* ssp. *eremicola*) as a special status species (https://www.blm.gov/sites/blm.gov/files/programs-natural-resources-native-plants-california-special-status-plants-concise-list_1.pdf). In the EA BLM says, "one plant species is listed as threatened or endangered by the federal government or the State of California and has the potential to occur along Kern River's ROW, Rusby's rose mallow." We note that neither USFWS nor the California Fish and Game Commission have listed the Rusby's rose mallow under the federal Endangered Species Act or California Endangered Species Act, respectively.

We request that BLM provide in the Decision Record a complete list of special status species in/near the Proposed Action using:
(https://www.blm.gov/sites/blm.gov/files/documents/files/Programs_FishandWildlife_BLMCA%20Special%20Status%20Species.pdf).

Page 32 - Environmental Consequences – Soils – This section describes adverse impacts to soils from the transport, application, and use of herbicides and discusses the long-term benefits. BLM concludes the "Proposed Action will not result in adverse effects on soil." Based on the

description of adverse impacts to soils, this conclusion is not supported. We recommend that this conclusion be revised in the Decision Record to say the Proposed Action would not result in substantial adverse effects on soil.

Page 34 – Vegetation and Noxious/Invasive Plants – In the EA, BLM says, "Personnel will apply no more [herbicide] than that required to effectively kill target species; therefore, the risk of surface runoff of herbicides will be low." We believe this statement was intended to mean that the minimum amount of herbicide would be applied to kill the target species and it would not exceed the maximum application rate. As worded, it allows the possibility that if a species were resistant to an herbicide, BLM would allow the application of greater amounts and/or greater frequency of an herbicide than specified in the conservation measures in the referenced BLM documents. We request that this statement be modified in the Decision Record to clarify that there is an upper limit to the amount and frequency of herbicide applied per the conservation measures in these referenced documents.

Page 34 – Wildlife – In the EA, BLM says, "impacts on wildlife from herbicide application and manual invasive plant treatment are not expected to adversely affect the ability of species to occupy or thrive on the Kern River ROW" and "Overall, there will be no adverse effects on wildlife communities as a result from invasive plant treatment." This conclusion is not supported based on the description of adverse impacts to wildlife provided prior to these statements. In addition, we note that recent studies on the effects of glyphosate have minor to substantial adverse impacts to mammals, birds, and reptiles (e.g., Gill et al. 2018, Landrigan and Belppoggi 2018, Leveroni et al. 2017, Myers et al. 2016, and Tarazona et al. 2017). We suggest revising this conclusion in the Decision Record to reflect the impacts to wildlife based on this recent information and the adverse impacts to wildlife presented earlier in this section.

Page 35 – Special Status Species – In the EA, BLM says, "Risks to desert tortoise from exposure to herbicides will be the same as for terrestrial wildlife described above." The description for terrestrial wildlife says, "Possible adverse direct effects from direct contact (i.e., direct spray) or ingestion of treated vegetation to individual animals include death, damage to vital organs, decrease in body weight, decrease in healthy offspring, and increased susceptibility to predation depending on exposure length and amounts." "Adverse indirect effects include habitat and range disruption (as wildlife may avoid sprayed areas following treatment), resulting in changes to territorial boundaries and breeding and nesting behaviors." BLM concluded "With the implementation of the SOPs for herbicide application in the 2007 PEIS ROD (BLM 2007b), the SOPs listed in Chapter 4, Environmental Consequences, of the 2016 PEIS (BLM 2016a), and mitigation measures (Chapter 6) designed to minimize impacts on desert tortoises, there will be no adverse impacts on the species." We suggest that BLM revise this analysis of effects in the Decision Record to describe how they would be minimized, not avoided for the desert tortoise.

In addition, we note, "There are several pathways by which special status animal species may be exposed to herbicides. These include (1) direct contact with the herbicide; (2) indirect contact with contaminated foliage; (3) ingestion of contaminated food/water items; (4) off-site drift of spray to terrestrial areas (e.g., areas outside fenced areas contaminated with herbicides); (5) surface runoff from the application area to off-site soils; and (6) wind erosion resulting in deposition of contaminated dust" (BLM 2015). For the Mojave desert tortoise, these pathways

include: for #1 - tortoises are unintentionally sprayed; for #2 - tortoises contact sprayed plants; for #3 - tortoises eat plants and soil material/drink water at excavated drinking sites with soil contaminated with herbicides; for #4 - areas outside fenced areas are contaminated with herbicides and tortoises are unintentionally sprayed, contact sprayed plants, and/or eat plants and soil material/drink water at excavated drinking sites with soil contaminated with herbicides; and for #5 and 6 - areas outside fenced areas are contaminated with herbicides and tortoises contact contaminated plants and soils, and/or eat plants and soil material/drink water at excavated drinking sites with soil contaminated with herbicides.

Given that the degradation rates of these herbicides are up to several months (e.g., Aminopyralid - soil biodegradation half-life of 103.5 days, photodegradation half-life in soil of 61 to 72 days; Glyphosate Roundup PRO – soil degradation half-life up to 174 days) (BLM 2015, Monsanto 2015), the persistence of these herbicides makes it more likely that the desert tortoise will be exposed to one or more of these herbicides via one or more of these pathways. The adverse effects of all these exposure pathways for the desert tortoise and its critical habitat should be analyzed in the Decision Record.

Chapter 6 Mitigation Measures – We suggest adding a measure in the Decision Record that requires boots, shoes, and equipment in addition to vehicles (tires and undercarriages) be cleaned before moving to another area for treatment of invasive species (page 10, LUPA-BIO-10). This measure will reduce the spread of any seeds or plant propagules from one work area to another.

In summary, we support immediate and ongoing actions to prevent and control the introduction of non-native plant species in the range of the Mojave desert tortoise. For the Kern River pipeline, this includes restoring habitat for the Mojave desert tortoise and protecting the Mojave and Colorado deserts ecosystem functions. These actions must include the development and implementation of an Integrated Pest Management Plan (Plan) that includes the use of herbicides. This Plan must have a goal of protecting the tortoise while implementing non-native plant management projects. To accomplish this, we request that BLM's first priority is to select herbicides that are not harmful to the tortoise. In the EA, we do not believe that the BLM showed that it considered/analyzed the health of the desert tortoise as of primary importance when selecting herbicides to use along the Kern River pipeline. We request that tortoise health be a primary concern with regards to the direct and indirect effects of the use of specific herbicides selected for use along the Kern River pipeline.

Based on the assumptions and unknown factors regarding the formulas and concentrations of herbicides, adjuvants, surfactants, and degradates and their synergistic effects; incomplete analysis of exposure pathways from wind drift, surface runoff, wind erosion, and transport to areas/habitat outside fenced areas; and limited or unavailable analysis of the acute and chronic effects of herbicides to the Mojave desert tortoise or other tortoises; we believe the BLM should be implementing a highly cautious approach to the selection and use of any proposed herbicide. We believe the BLM should be monitoring the genetics and physiological and reproductive health of the desert tortoise to determine if the assumptions made in an ecological risk assessment are correct.

We appreciate this opportunity to provide input and trust that our comments will further protect tortoises during authorized project activities. Herein, we ask that the Desert Tortoise Council be identified as an Affected Interest for this and all other BLM projects that may affect species of desert tortoises, and that any subsequent environmental documentation for this particular project is provided to us at the contact information listed above.

Regards,

Edward L. LaRue, Jr., M.S.
Desert Tortoise Council, Ecosystems Advisory Committee, Chairperson

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