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

Via email only

25 June 2018

Shawnna Dao, Realty Specialist (sdao@blm.gov)
Bureau of Land Management, Arizona Strip Field Office
345 East Riverside Drive
St. George, Utah 84790
blm_az_asdo_comments@blm.gov

RE: Environmental Assessment DOI-BLM-AZ-A010-2017-0029-EA Mohave County - Front Street Right-of-Way Amendment AZA-029565 = Front Street EA

Dear Ms. Dao,

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.

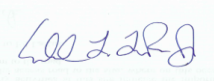
We appreciate this opportunity to provide comments on the above-referenced Environmental Assessment (EA) and ask that you accept and consider those that follow. Given the location of the proposed project in habitats likely occupied by Agassiz's desert tortoise (*Gopherus agassizii*) (synonymous with "Mojave desert tortoise") on the Arizona Strip, our comments pertain to enhancing protection of this species during activities authorized by the Bureau of Land Management (BLM).

Because, as the EA states: "Approximately 1.7 acres of Mojave Desert tortoise habitat would be lost if the proposed ROW amendment is authorized," we believe it is important that Alternative B in the EA be implemented. We are in complete support of transplanting Joshua Trees to provide perennial vegetation and salvaging and replacing topsoil to provide a seedbank as these actions will provide significant habitat recovery. We append an unpublished paper on the transplanting of Joshua Trees (see below). We also strongly support the addition of barrier fencing to the perimeter of the project to provide protection for tortoises occurring in adjacent areas from incidental mortality associated with road construction and ongoing use.

We are impressed with and thank you for the high quality and detail of this EA. In addition, we strongly support the "Mitigation Measures and Project Design Features" described in Section 4.4 of the EA. For example, we appreciate the Mojave desert tortoise related measure or feature: "Compensation for residual impacts will be required." We believe that this is reasonable and necessary to compensate for the loss of 1.7 acres of tortoise habitat, and consistent with the compensation that BLM previously required for similar BLM project authorizations.

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

CC: Lorraine Christian, Field Manager (lmchrist@blm.gov)
Amber Hughes, NEPA Coordinator (ahughes@blm.gov)

Appended:

Bollinger, D. 2012. Transplanting Joshua Trees (*Yucca brevifolia*) from field to field and field to container. Unpublished report prepared on behalf of Joshua Tree National Park. Joshua Tree, CA.

Time of Year

Although Joshua trees may be transplanted successfully at any time of the year, spring and fall seem to be best, followed by winter, with summer being the least desirable time. More information regarding this would be useful; to date little research exists on transplanting methods. Trees require warm temperatures for root establishment, without the stress that high temperatures would cause. Even though they look like cactus, they are actually monocots related to grasses and lilies, and require speedy but careful handling.

Salvage Site and Transplant Site Conditions

Transplant success will be enhanced if the salvage site and the receiving transplant site have similar soil, climate and topographic conditions. Although slight variations in soil texture, soil structure, pH and salinity will each have a small effect on success, these alone will not prevent Joshua trees from transplanting well. Avoid soils with high clay content. Adverse conditions are most often encountered when topsoil has been removed, leaving only subsoil to plant in, or when distance and/or topography differences between sites are great. Ideal sites will have loamy sand with pH around 8.0, with low compaction and good drainage.

Plant Selection and Preparation

Select plants that are healthy and vigorous, up to the size you can easily handle with whatever equipment you have available. Rough handling decreases transplant success, and scrapes and broken branches do not heal over. Large, bright green leaves on upright arms indicate a healthy plant. Pre-watering at the base of the plant may promote rootball stability, and will also help prevent root desiccation during transport. Choose plants in loamy or sandy soil that are easy to dig without excessive root damage. Anti-transpirants have not been shown to have a beneficial effect, possibly because the leaves are naturally resistant to desiccation. Mark a compass point on the plant to help with orientation to the sun during transplanting.

Transplant Site Preparation

If at all possible, prepare the receiving site before removing transplants. Dig holes approximately the same size as transplant rootball, and fill with water at least one hour before planting. This is essential to precharge soil moisture, and is a good check on microsite drainage conditions. If water does not drain from the hole within an hour or two, it may not be suitable for Joshua trees. Do not add fertilizers or soil amendments, and do not prewater so early that the soil dries before transplanting.

Plant Removal and Transport

Begin by gently slicing deep into the soil around the plant as far from the base as practical, approximately 18" to 24". Joshua trees have a very short and shallow but fibrous root system, similar to grass. The more of it preserved, the better survival. Continue to slice under the base to free the plant. It is better to cut roots free than pull them, so avoid levering the rootball. Keep as much of the soil intact around the rootball as possible. If long roots have been severely damaged, trim them back to an undamaged point. Do not apply fungicides, sulfur, etc. Gently place the plant into the transportation container (back of truck or flatbed trailer), and keep the entire plant moist and shaded. Do not allow it to sit uncovered in the sun for any length of time, especially with roots exposed. During transport, keep covered to lessen wind desiccation. Rapid re-planting is essential; do not dig any more than you can re-plant that day.

Site Planting

Be sure your planting holes have been precharged with plenty of water. It will not hurt the plant to be set into mud or standing water as long as drainage is good. Determine tree orientation using compass point marked on the tree before digging. Gently place the Joshua tree into the hole, watering in backfill as you go. Be sure it is placed no higher or deeper that it grew before. Gently tamp the soil around the base of the plant. Be sure the plant is stable, and that the backfill has no air pockets. Do not add fertilizer. Creating a saucer-shaped depression the same width of the rootball may help channel rainfall on slopes, and keep supplemental water near the plant. Never plant into dry soil thinking that later watering will be enough. It usually does not reach the rootball unless an extremely long time is spent watering, and roothairs die very quickly. It is much better to precharge the hole and water while backfilling.

Maintenance Watering and Fertilization

Joshua Trees are very good at surviving under dry conditions, but until roots re-establish, they will need extra water. Depending on the time of year, this may be 90 to 120 days. Frequency and amount of supplemental water depends on seasonal temperatures, humidity, wind, etc. During the hottest, driest part of the summer, check soil moisture weekly. Probe down about an inch around the edge of the rootball of a few plants to determine if watering is needed. Do not water if any moisture is found (especially in the summer when wet, hot conditions favor root rot). Very sandy soils will need more water than other soil types. Do not fertilize for at least sixty to ninety days, if at all. Use a slow release form with low nitrogen, and chelated micronutrients, and apply at low rates. Liquids and buried tablets are less likely than granules to be removed from the site by wildlife.

Suggestions

The two biggest enemies of transplant success are time and rough handling. Accomplish your transplant operations as quickly as possible without sacrificing quality. Treat your transplants gently because at this time they are very vulnerable. The best maintenance will not compensate for carelessness in removal or transplanting. If Joshua trees cannot be placed in their final location immediately, it is better to place in a large container and transplant from that rather than heel into the ground. If they cannot be containerized, they should remain in the ground at least a year to recover from previous transplant shock before moving.

Transplanting From Field to Container

General Information
Everything in the above sections on *Time of Year*, *Plant Selection and Preparation*, and *Plant Removal and Transport* also applies to field to container transplanting. Instead of transplanting into the ground, Joshua trees are transplanted into a container. Native soils tend to pack down in containers, and must be amended to provide extra drainage and aeration.

Potting Soils and Containers

Select a potting soil that is 40% washed or mortar sand, 40% perlite, and 20% fine organic matter. The organic matter should not be manure, but rather composted green matter. Do not have fertilizer or other amendments added. Container selection may vary according to budget and availability. The larger the container, the more rootball can be harvested. Standard landscape industry tree boxes may be used in the same manner as harvesting a standard tree.

Transplanting Into the Container

If possible, dig the rootball and assemble box around it before removal from the ground, just like with standard trees. If not, have everything set up at the nursery before transplants arrive. The potting soil mixture should be very moist. Place transplant into container, backfilling so that soil level around the trunk is no higher or lower than before. Be sure the roots are not kinked or doubled over in the container, and that there are no air pockets. Place the containers under shade if possible and water again only when the top ½" of soil is dry. Do not add fertilizer. If there is no shade, re-orient container according to marked compass point on plant.

Maintenance

Keep containers under shade if possible for two to three months. After that it may be removed, but caution should be used if this time is during the extreme summer months. Check for soil moisture weekly, but water only when the top ½" of soil is dry. After two months, watering may be decreased until the top 1" of soil is dry. At no time should the containers be allowed to dry out. Avoid overhead sprinkling After ninety days a slow release, low nitrogen fertilizer with chelated micronutrients may be added. Outside containers in a group or block should be shaded from the sun to reduce soil temperatures.

Outplanting from Containers

Outplanting container Joshua trees is the same as outlined in above sections *Site Planting* and *Maintenance Watering and Fertilization*. Establishment time, however, will be less. If boxed, remove bottom from box, place entire box in the hole, then remove sides just before backfilling. Disturb roots as little as possible.

Monitoring

Keeping track of methods used and survival rates will enable you to refine transplant techniques. Large changes in survival can also help pinpoint variables that although cannot be controlled, must be factored in during the bidding and planning process.