

APPENDIX I.
Burrowing Owl Relocation Analysis

Burrowing Owl Relocation Analysis

Prepared for

Bureau of Land Management

Prepared by

SWCA Environmental Consultants

August 2011

CONTENTS

1	Introduction.....	1
2	Relocation Process	1
2.1	Owl Trapping and Burrow Excavation	5
2.2	Captured Owls Care and Translocation	5
2.3	Burrow Construction.....	6
2.4	Relocation Monitoring and Reporting	6
3	Affected Environment	6
4	Environmental Consequences.....	7
4.1	Direct and Indirect Effects	7
4.2	Cumulative Effects.....	8
4.2.1	General Environmental Resources	8
4.2.2	Western Burrowing Owl	8
4.3	Potential Mitigation	9
5	References.....	10

FIGURES

Figure 1.	Map of the proposed BUOW relocation area.	3
------------------	--	----------

TABLES

Table 1.	Acres of Suitable Habitat by Landowner	1
-----------------	--	----------

This page intentionally blank

1 INTRODUCTION

The western burrowing owl (*Athene cunicularia*) (BUOW) is protected under the federal Migratory Bird Treaty Act (MBTA), Arizona Revised Statutes Title 17, and is designated as a wildlife species of special concern by the Arizona Game and Fish Department (AZGFD). A reconnaissance-level survey was conducted in 2009 and 2011 to determine BUOW presence/absence and the status of the species in the Sonoran Solar Energy Project (SSEP) area. During the surveys, 6 BUOW individuals, 17 burrows, and sign¹ were found throughout the Project Area. Additional protocol-level surveys would be completed in the Project Area and a 200-meter buffer prior to construction for each of the three potential phases of the Project. Boulevard (the Proponent) has committed to obtaining a MBTA relocation permit and relocating any identified BUOW individuals found during these surveys to a separate suitable area and constructing artificial burrows for their future use. This appendix provides a description of the relocation process and analyzes the direct, indirect, and cumulative impacts from relocating BUOW to suitable conservation areas away from the project.

2 RELOCATION PROCESS

The Proponent obtained the services of Wild by Heart (WAH, an Arizona-based, non-profit 501(3)c organization that provides raptor rescues and is an U.S. Fish and Wildlife Service (USFWS) permit holder for owl trapping and relocations) to perform the BUOW removal, excavation, and relocation for the project. WAH would follow existing protocols that have been corroborated with AZGFD and Bureau of Land Management (BLM) biologists.

The relocation process would consist of performing pedestrian transect surveys to identify existing active burrows, removing burrow contents, transferring nest contents to WAH’s facility, and relocating the BOUWs to the relocation area. All owls found during pre-construction surveys would be relocated to the Gila River Burn Area in Maricopa County, Arizona, Section 21 and 22, Township 1 South, Range 4 West (Figure 1). The Gila River Burn Area is entirely contained within the Fred J Weiler Greenbelt, an area of conservation comprising over 12,000 acres along the Lower Gila River. The Gila River Burn Area is approximately 80 acres and managed for native riparian vegetation to support migratory birds; it has been completely denuded of tamarisk (*Tamarix* spp.). Approximately 25.5 acres of suitable habitat in the northern section of the Gila River Burn Area has been designated for new burrow construction and BUOW relocation; a breakdown of these habitat acres by landowner is provided in Table 1. The BLM would manage approximately 60% of the BUOW relocation area, whereas private landowners would account for the other 40%.

Table 1. Acres of Suitable Habitat by Landowner

Landowner	Acres of Suitable Habitat
BLM	15.3
Private	10.1
Total	25.5*

*Due to rounding, acreage of disturbance by landowner is slightly lower than the total surface disturbance.

¹ The presence of sign suggests that this species is breeding in the Project Area.

This page intentionally blank

This page intentionally blank

The Gila River Burn Area was identified by the BLM and cooperating agencies as a suitable relocation area because it resembled Project Area habitat and had a low probability of outside disturbances (e.g., feral dogs, vehicular traffic, or vandalism). The BLM also considered on-site placement of artificial burrows within the SSEP footprint, but determined that suitable habitat was limited and that relocated BUOWs could be impacted by construction and operation of the SSEP.

The relocation area would be accessed using an existing, gated dirt road off South Wilson Avenue in Palo Verde, Arizona, then following this dirt road across the channel bridge to the eastern edge of the area. During construction of artificial burrows, approximately 6–10 volunteers would be on-site. Construction would require the use of a backhoe, several pick-ups, and a trailer to house volunteers. Burrow construction would follow WAHs protocols and be based on the SSEP phased construction schedule. There could be seasonal restrictions due to the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and Yuma clapper rail (*Rallus longirostris yumanensis*) breeding and transient seasons (May through September) through the Lower Gila River corridor. These are currently pending USFWS and BLM consultation processes.

2.1 Owl Trapping and Burrow Excavation

WAH would plan the level of effort and approach to owl trapping during each phase of construction based on field survey results. In general, survey-identified owls would be live-trapped in the SSEP using either a tube trap or clamshell trap. Tube traps are cylindrical pipes that permit entrance into the tube but prevent tube exit, whereas clamshell traps consist of two hinged sides that are laid flat but spring together when triggered to close around the animal. The tube trap would be placed inside a natural burrow, whereas the clamshell trap would use a live mouse to lure the owl to the trap. Mice would not be injured by the owl using the latter trap, and both traps would be designed to minimize injury risk to trapped owls. After live trapping as many owls as possible, all burrows or “possible use” burrows would be excavated by hand to locate any hidden nestlings or adult owls. Staff would use an ungloved hand to “feel” out an arms-length section of a tunnel for any occupants or side tunnels. A small towel would be used to block off any owls hiding further down in the burrow from escaping. Each section would then be carefully dug out from the ground level down to prevent the tunnel system from collapsing and killing any residing owls. This process would be repeated until all tunnels were excavated and all owls were safely removed. After excavation, the entire burrow system would be filled in to prevent the owls from re-habiting that area.

All BUOWs removed would be transported to the WAH facility and would receive care until they were de-sensitized and the artificial burrows in the relocation area were installed.

2.2 Captured Owls Care and Translocation

All captured owls would be transferred by vehicle in animal crates to the WAH facility in Cave Creek, Arizona. The facility includes 51 outdoor aviaries and an on-site critical care room; all owls captured from any one site would be kept together at the facility, although other owls could be added to form a larger colony. When ready to be relocated, the owls would be transported to the relocation area and placed inside a fabric tent with free access to the artificial burrows and to perches. Defrosted mice and fresh water would be brought to the tent each day by volunteers. The owls would be held 30 days at the area to ensure that the owls’ bond with their previous burrow location was broken. It could be necessary to hold the owls even longer, depending on the time of year, food and water resources, the age of any nestlings, the selection and approval of habitat construction on new areas, and the migration cycle.

After acclimation, the tent cover would be removed and the owls would be free to select their new burrows. To the furthest extent practicable, owls would be released during the springtime to improve breeding success. WAH could also use video monitoring, solar powered lights, and/or white cards to attract insects to increase the food supply and improve BUOW relocation success.

2.3 Burrow Construction

WAH would determine the type and location of burrows needed upon further evaluation of the relocation area and field survey results. Artificial burrows would be constructed at the relocation area at a minimum ratio of four new burrows to one SSEP excavated burrow. Artificial burrows would be installed in groups of eight, with each burrow complex covering roughly 540 square feet (0.01 acre). Constructing multiple burrows within the same trench provides several key benefits, including increased shelter from predators, less competition for burrow areas, improved parasite removal by insects, additional room for expansion for relocated owls and their young, and lower construction cost.

Burrows would be installed at a depth of 4 feet to provide consistent temperature at the nesting area. A 14-foot, 4-inch diameter PVC pipe would be used to provide entrance to the burrow; the pipe would have a 90 degree bend midway along the length to minimize light intrusion and to help the owls defend the burrow. WAH would employ various means to harden the tubing so that dogs and other animals could not dig up or otherwise destroy the tubing.

2.4 Relocation Monitoring and Reporting

The MBTA permit issued by USFWS Region 2 would require monitoring protocols and a monitoring report submitted within two years of completion of the relocation process.

3 AFFECTED ENVIRONMENT

The proposed relocation area is located just north bank of the Lower Gila River across from of the Robbins Butte State Wildlife Area, approximately 6 miles southwest of Buckeye, Arizona, and 6.8 miles from the Project Area. The area was burned in a wildfire in April 2007. Subsequently, the burnt vegetation was removed; the area was graded and is currently undergoing natural succession of native herbs and forbs. The surrounding area to the south has been revegetated with native plant species and other associated shrubs, herbs, and grass communities.

The area is characterized by a hot, dry climate with limited annual rainfall of approximately 7.5 inches at Buckeye. Portions of Maricopa County have been designated nonattainment for particulate matter (PM₁₀), carbon monoxide, and ozone.

Soils in the relocation area are composed of Carrizo and Brios soils, 0 to 3 percent slopes, which consist of deep, well drained, sandy loam alluvial soils with low to moderate susceptibility to wind and water erosion. As part of the Buckeye fire rehabilitation project (BLM 2009), the whole area was cleared via a dozer, the root system of the tamarisk was removed, and the resulting topsoil was stockpiled to create a berm for flood control along the northern edge of the area, adjacent to the Arlington Canal.

Typical land uses in the region consist of agriculture, recreation, and rural development; previous BLM land management activities in the relocation area have not resulted in community conflict (BLM 2009). There are no known prime or unique farmlands, wilderness, energy resources, wild or scenic rivers, cultural resources, historic properties, or Native American sacred or religious sites within the relocation area (BLM 2009). The relocation area does, however, include 24.6 acres of the 22,746-acre Powers Butte

grazing allotment. The allotment is classified as ephemeral and provides periodic, suitable vegetation for livestock grazing; from 1998 to 2008, the allotment was only grazed four out of ten years for an average of 159 animal unit months (AUM) (BLM 2011).

Threatened, endangered, and candidate species and habitat located in the region include the southwestern willow flycatcher and its critical habitat, Yuma clapper rail, and yellow-billed cuckoo (*Coccyzus americanus*) (USFWS 2010). Adjacent habitat also supports a wide range of non-game and game species, reptiles, amphibians, fish, and migratory birds.

The area is located within the West Salt River Valley sub-basin and Lower Salt watershed. The sub-basin has been developed for agricultural, residential, industrial, and commercial water uses. Groundwater quality varies; previous groundwater sampling has found elevated dissolved solids, nitrate, volatile organic chemicals, pesticides, and arsenic in the aquifer (U.S. Geological Survey 2010). The area is also adjacent to the Gila River, a perennial waterbody. The Gila River is impaired for chlordane, DDT, and toxaphene for approximately 4 miles between the Salt River and the Agua Fria River (EPA 2011). There are no wetlands located at the area, but the relocation area contains 25.5 acres of 100-year floodplain.

4 ENVIRONMENTAL CONSEQUENCES

4.1 Direct and Indirect Effects

Although the total number of artificial burrows built in the relocation area would not be known until SSEP construction, the 2011 reconnaissance survey identified 17 burrows in the SSEP, of which six were active with at least one BUOW individual. For the purposes of analysis, therefore, construction of 68 burrows² is considered a conservative estimate for surface disturbance impacts.

Construction of the artificial burrows would temporarily disturb up to 0.1 acre of soils in the relocation area. Excavated soils would be stored on-area and would be re-spread over the excavation area upon completion of construction. Burrow excavation and vehicular travel would also result in temporary increases in fugitive dust and emissions in the area; however, impacts would be of short duration and limited severity, due to the small quantity of vehicles and construction equipment required for BUOW relocation.

BUOW relocation activities would temporarily remove up to 0.1 acre (less than 0.01 AUM) of the Powers Butte allotment from livestock grazing use, as well as potentially reduce the recreational experience for hunters, anglers, and other recreational users along the Gila River due to construction activity and noise. The U.S. Environmental Protection Agency (EPA) has published data on typical noise levels from construction equipment. Based on the EPA data, the highest noise levels from construction would be from backhoes, generating maximum noise levels near 90 dBA at 50 feet from the equipment, which would attenuate to background noise levels of approximately 40 dBA over 2.5 miles (EPA 1981). Such levels would be clearly audible. Given the temporary nature of the construction noise, however, no adverse or long-term effects to recreational experience would be anticipated. Likewise, impacts to livestock grazing would be of short duration.

The Proposed Action would not likely result in a trend toward federal listing of threatened, endangered, or candidate wildlife species in the region. There would be no loss of individuals, and construction could be limited to periods outside of southwestern willow flycatcher and Yuma clapper rail breeding and transient seasons, pending the BLM and USFWS's decision. Up to 0.1 acre of vegetation or wildlife habitat would

² Based on the 4:1 ratio for artificial burrow construction to SSEP excavated burrow.

be disturbed or removed by construction activities. Construction traffic and noise could also result in the spread of invasive weeds, an increased risk of vehicle collision-related mortality, or short-term impacts to wildlife movement and foraging in adjacent areas. Impacts would be of short duration, however, and of limited severity due to the low amount of acres impacted and on-going invasive weed control.

Relocation of the BUOWs would result in the destruction of existing SSEP burrows and potential harm, increased stress, diminished health, or decreased breeding success for relocated owls, depending on the suitability of the relocation area. The area was chosen for comparable conditions to the SSEP and suitable BUOW habitat, however, and the relocation would be conducted by qualified (and permitted) biologists to minimize the risk of impacts to relocated owls. Artificial burrows would be constructed at a four to one ratio to destroyed SSEP borrows to mitigate for the loss of existing burrows and to decrease competition at the relocation area.

Groundwater quantity and quality would not be impacted by BUOW relocation activities. No groundwater sources would be required for construction, and burrow excavation would be limited to a depth of 4 feet. Surface disturbance from construction activities could result in wind- or water-generated soil erosion and increased sedimentation of the adjacent Gila River. However, the area does not contain highly erosive soils, and construction of each burrow complex would disturb less than 0.02 acre of soil. Construction of the artificial burrows and alteration of natural contours could result in short-term altered floodplain conditions that would inhibit flood control and water quality maintenance functions. Impacts would be mitigated through restoration of floodplain soils and topography following construction, however.

4.2 Cumulative Effects

4.2.1 General Environmental Resources

Cumulative effects include the effects of the future federal, state, tribal, local, or private actions that are reasonably certain to occur in the relocation area. Past, present, and reasonably foreseeable activities in the lower Gila River include farming, ranching activities, rural development, and recreational activities. Implementation of all or any of these actions has affected and continues to affect the environment including, but not limited to, land conversion and vegetation clearance, decreased water quantity and quality, and wildlife population and habitat disturbance and loss. Cumulative effects to area resources would include the following types of impacts:

- Changes in land-use patterns that would further fragment, modify, or destroy wildlife habitat or displace species
- Increased recreational activities and encroachment of human development that would remove riparian/wetland vegetation and potentially degrade water quality

The addition of up to 0.1 acre of surface disturbance as a result of BUOW relocation would contribute to on-going surface disturbance in the region, but would not result in additional habitat fragmentation, modification, or destruction or water resource degradation.

4.2.2 Western Burrowing Owl

The BUOW's historical breeding range in the United States includes the west coast, southwestern desert, and the Great Plains. Land conversion to agriculture and urban development across the range has led to habitat degradation, fragmentation, and loss; increased predation; BUOW mortality from illegal shooting; and a reduction in prey species through pesticides, rodent control, and other contaminants. These impacts

have resulted in range reductions across the northern and eastern extent of the BUOW's historic breeding range and in changing population levels. Population trend estimates in the United States are limited by small sample size and limited data, but they suggest that BUOW populations are declining in the northern half of the Great Plains and generally increasing in the northwest interior and some southwestern deserts. Population studies in Arizona have not yielded statistically significant gains or declines for BUOW populations; the current BUOW population estimate in Arizona ranges from 100 to 1,000 BUOW individuals (USFWS 2003).

Although the rates of survival and reproduction of relocated BUOW individuals are still under study, the process is generally regarded by the scientific community as an accepted mitigation measure. The USFWS's (2003) assessment of BUOWs determined that conservation of burrows is an essential component to maintaining BUOW populations. Thus, BUOW relocation of owls would provide a beneficial cumulative impact by protecting existing BUOW individuals, providing new suitable habitat, and increasing the number of available borrows for potential use by BUOW individuals.

4.3 Potential Mitigation

No additional potential mitigation has been identified for BUOW relocation beyond applicant-committed measures and design features discussed in Chapter 2 of this final EIS.

5 REFERENCES

- BLM 2009. Buckeye Fire Rehabilitation Categorical Exclusion. Lower Sonoran Field Office, Phoenix, Arizona. AZ-200-2007-006.
- _____. 2011. Gila River Hazardous Fuels Reduction and Riparian Restoration Environmental Assessment. Lower Sonoran Field Office, Phoenix, Arizona. AZ-P020-2011-007.
- EPA. 2011. Surf Your Watershed: Lower Salt Watershed – 15060106. Available at: http://cfpub.epa.gov/surf/huc.cfm?huc_code=15060106. Accessed on: July 25, 2011.
- _____. 1981. Noise in America: The Extent of the Noise Problem. EPA Report No. 530/9-81-101, September 1981.
- USFWS. 2003. Status Assessment and Conservation Plan for the Western Burrowing Owl in the United States. U.S. Department of Interior, USFWS, Biological Technical Publication FWS/BTP-R6001-2003, Washington, D.C.
- _____. 2010. Biological Opinion on Hazardous Fuels Reduction and Vegetation Restoration in the Lower Gila River. Arizona Ecological Services Office. Phoenix, Arizona. AESO/SE 22410-2009-F-0509.
- U.S. Geological Survey. 2010. Section 7.—Conceptual Understanding and Groundwater Quality of the Basin-Fill Aquifer in the West Salt River Valley, Arizona. *In* Conceptual Understanding and Groundwater Quality of Selected Basin-Fill Aquifers in the Southwestern United States. Professional Paper 1781.