STATE OF CALIFORNIA

Energy Resources Conservation and Development Commission

In the Matter of:	)	
	)	DOCKET NO. 08-AFC-13
APPLICATION FOR CERTIFICATION	)	
FOR THE CALICO SOLAR	)	
PROJECT	)	
	)	

INTERVENOR BASIN AND RANGE WATCH

Exhibit 804: Opening Testimony of Laura Cunningham

Re: Biological Resources, Mojave fringe-toed lizard

Docket 08-AFC-13

QUALIFICATIONS

My qualifications are provided on my Resume attached to this Testimony and as discussed below.

I have worked as a wildlife biologist carrying out fieldwork since 1992, for the California Department of Fish and Game, United States Geological Survey—Biological Resources Division, on research studies for universities, and as a private contractor. I have surveyed many Mojave fringe-toed lizard (*Uma scoparia)* locations on formal scientific surveys for university research studies, as well as visiting other locations to view the species and habitat.

STATEMENT

1. The photographs in exhibit 800, 801, 802, and some in 803 are mine, taken with a digital Nikon D70 camera, and iPhone GPS digital camera with Trimble software.
2. I visited the Calico Solar Project proposed site, San Bernardino County, on 11 July 2010. On this visit I spent 4 hours on the site and immediate vicinity. This was not a formal scientific survey, and routes were not stratified nor randomized. The visit was a reconnaissance trip that would normally be done to design a future formal survey. Certain observations, however, can be made from this type of survey. I took photographs and notes concerning Mojave fringe-toed lizard habitat quality on three routes within the Calico Project Site between the BNSF railroad track and Interstate highway 40. All photographs were geo-tagged. Track 3 was on known fringe-toed lizard habitat where I

have seen this species earlier in spring: this area had finer sand and approximately 10% gravel. The other two tracks are in areas of unknown presence-absence, but may have potential habitat. Track 2 was in the west end of the project site between the BNSF railway and highway 40. Some areas of fine gravel flats with small sandy washes exist near the railway, much of the wide flat area is unsuitable for fringe-toed lizards, being hard-packed silt and fine gravel showing mud cracks, evidence of standing water after rains. The lava field had potential suitable habitat with pockets of loose fine sand. Track 1 was in the middle of the project area between the railway and highway east of Hector Road, and had a complex mosaic of desert pavement, coarse sand areas, fine sand at the bases of shrubs, sandy areas between low ridges, and small and one large wash with varying amounts of sand. Much of this could qualify as connectivity or seasonal habitat. Fringe-toed lizards were not active during this visit, and may have been in estivation (dormancy) underground during this hot period of summer. My estimates of habitat quality were based on prior surveys in known fringe-toed lizard habitat across the range of the species. I used a rating of from 1 to 3 to describe habitat quality: 1 being good quality permanent habitat where Mojave fringe-toed lizards breed and are common; 2 is lesser quality habitat where lizards would be uncommon but still permanent residents; 3 is connectivity habitat where lizards would be expected only seasonally or irregularly in dispersal across poorer quality habitat. This last category matches what I observed at the Ford Dry Lake area, where I speculate during early spring lizards moved into hard-packed gravelly areas during seasonal activity. Habitat 3 types would be important in maintaining genetic flow between good-quality habitat patches of finer sand. See Exhibit 800.

3. On 28 March 2010 I visited the Calico Solar Project and saw 2 adult Mojave fringe-toed lizards and one immature at 11:30 AM, on the known sandy patch south of the BNSF railway. UTM coordinates: 11S 554368 E, 3850463 N (using a Garmin GPS). Habitat consisted of sand in a wash, flat, and hillslope. I also walked in sand flat areas within 1,000 meters north of the railway in this area, which appeared to be potential fringe-toed lizard habitat as well.
4. On 16 March 2010 I visited the area of Ford Dry Lake area and Palen Dunes in Chuckwalla Valley, Riverside County, where I saw Mojave fringe-toed lizards on both sand dune habitat but also on habitat that would normally be considered unsuitable for this species. At 3:40 PM I saw about 15 adult and immature fringe-toed lizards active in flat desert with scattered Creosote shrubs (*Larrea tridentata*), 0.5 mile (approximately 804 meters) east of the Palen Dunes sand areas (using the vehicle odometer while driving along a dirt road). This area was hard-packed substrate with light gravel, some small areas of loose sand a few square meters in size or less, but not dune or sand sheet. It would be considered atypical habitat for this species. Lizards ran into rodent burrows for cover. Air temperature was 82 degrees Fahrenheit (using a Kestrel thermometer). Other vegetation consisted of plantain (*Plantago ovata*), Desert lily (*Hesperocallis undulata*), Sand verbena (*Abronia villosa*), and introduced Sahara mustard (*Brassica, tourneforti*). See Exhibit 801.
5. Based on these field observations, it is my professional opinion that more than 164.7 acres of Mojave fringe-toed lizard habitat exists on the Calico Solar Project site, especially when considering connectivity corridors. Formal surveys should be undertaken to determine habitat extent during March through May when lizards are most active.

6. Connectivity habitat has not been adequately considered. Two models of sand flow can be posited for the area: 1. Sand sources come from washes pouring out of the Cady Mountains to the north of the habitat area, providing sand (considered in the Supplemental Staff Assessment); and 2. Sand flow derived from the Mojave River drainage and Troy Dry Lake to the west, moving in a sand flow corridor pushed by prevailing winds from west to east. Satellite imagery provides evidence of the latter (Exhibit 802). Both sources probably contribute sand to the project area, but if most of the Mojave fringe-toed lizard habitat sand is from the west, then the potential exists that the project will block sand flow to the east, to Mojave fringe-toed lizard habitat patches in Pisgah Area of Critical Environmental Concern. This needs to be considered in approval of the project and mitigation. The area may be a unique geographic connectivity location, which cannot be mitigated.

EXHIBIT LIST

Doc. No. - Description

800 - Informal survey tracks and photographs at Calico Solar Project site, San Bernardino County, California.
801 - Mojave fringe-toed lizard habitat at Ford Dry Lake area, Riverside County, California.
802 - Satellite imagery of sand in the Calico Project Site area.
803 – Visual summary of Impacts from the Calico Project.
804 – Supplemental Testimony by Kevin Emmerich.

Resume of Laura Cunningham
PO Box 70
Beatty NV 89003
(775)553-2806
bluerockiguana@hughes.net

EDUCATION:

Bachelor of Science in Paleontology, University of California, Berkeley. 1990.

Graduate Certificate in Natural Science Illustration, Science Communication Program, University of California, Santa Cruz. 1991.

BIOLOGY WORK EXPERIENCE:

Biologist for Chuckwalla Study in Death Valley National Park and region. Visual encounter surveys for repeat counts to estimate population trends over multi-year period, for the Timbisha Shoshone Tribe. Concerns about declines noted by the Tribe triggered a long-term study on Chuckwalla feeding behavior, habitat, breeding areas, Traditional Ecological Knowledge, and potential threats. 2007-2009.

Biological Monitor on Nellis Air Range, Nevada, during construction activities. Implemented monitoring for Desert tortoise around new construction, and permitted to handle tortoises and nests. For Kiva Biological Consulting. April-May 2006.

Biologist for construction of the Hyundai/Kia California Proving Ground for Bill Vanherweg. Wide range of tasks including implementation of 100% coverage GPS survey technique, participating as a team member in multiple large-scale desert tortoise surveys, managing a field team of 5 persons, providing environmental awareness briefings to project personnel, and biological monitoring of construction activities. Clearance surveys prior to and during the construction over 7 square miles of habitat. Implemented project environmental compliance and mitigation measures for Desert tortoise, nesting birds, raptors, Burrowing owl, Badger, and rare plants. Provided daily reports to project management. October 2003 and March-April 2004, over 600 hours of tortoise clearance surveys and construction monitoring.

Biologist on Surveys for Tortoise on Blythe Dam project. Initial surveys for tortoise and sensitive species in Riverside County, California, for Edward LaRue. April 2000.

Biological Monitor on AT&T Level 3 fiber optic construction project from Palmdale to Needles.
Implemented project environmental compliance and mitigation measures for Desert tortoise. October 1998.

Volunteer in Desert tortoise study with Hal Avery, PhD, in southern Ivanaph Valley. Radiotelemetry of tortoises, habitat surveys for tortoise forage and interaction with cattle, rainfall

measurement, X-ray of tortoises for egg counts. Spring and Fall 2000. 50 hours.

Volunteer in Furance Creek Visitor Center in Death Valley National Park. Involved in visitor services, provided information on hiking, back-country issues, naturalist programs. January-December 2000.

Project Manager on U. S. Geological Survey Species at Risk Program research on the Panamint Alligator Lizard in Inyo and Mono Counties, California. Work under David Morafka, PhD, designing and implementing straight-line drift-fence and pitfall trap surveys, visual encounter surveys, and artificial cover sampling. Designed and implemented habitat surveys and behavioral studies, in cooperation with the San Diego Zoo. Wrote reports. 2001-2004.

Biologist, lizard diet study, Ft. Irwin. Work under David Morafka, PhD, examining diet of Western whiptail and Zebra-tail lizards in relation to disturbance.

Biologist, Mojave fringe-toed lizard survey on OHV recreation areas. Work under David Morafka, PhD, for BLM study on affects of off-road recreation on lizard density, distribution, and population at Dumont Dunes and Rasor Dunes. Area-constrained surveys and habitat characterization. Presence-absence surveys on other habitats in region. 2002. Contributions to Morafka, David J. 2002. 1000 meter transect analyses of frequencies of Mojave fringed- toed lizards at ORV BLM sites at El Mirage Dry Lake, Rasor Road, and Dumont Dunes, San Bernardino County, California, Summary Report for 2002 and recommendations for 2003. Prepared for Anteon Corporation.

Biologist, Mojave fringe-toed lizard surveys and genetic sampling. Work under David Morafka, PhD, at El Mirage Dry Lake, Coyote Holes, Silver Lake, Rasor Dunes, Dunomt Dunes, Ibex Dunes. 2001-2002. Contributions to Murphy, Robert W., Tanya L. Trépanier, and David J. Morafka. 2006. Conservation genetics, evolution, biogeography and distinct population segments of the Mojave Fringe- toed Lizard, *U. scoparia*. Journal of Arid Environments 67 (2006) 226–247

Biologist designing and implementing Salamander Surveys in southern Sierra Nevada BLM special use areas for OHV recreation, for Ridgecrest BLM. Visual encounter surveys, patch sampling, and artificial cover sampling. Wrote report. 2005.

Biologist surveying for Snowy plovers in Kern and Inyo County. For Ridgecrest BLM, used USFWS protocols. At Koehn Lake and Panamint Valley wetlands. 2006.

Biologist surveying for Least Bell's Vireo, Surprise Canyon, California. For Ridgecrest BLM, using USFWS protocols. May 2006.

Volunteer implementing breeding bird surveys in three locations in Nevada. Data collected by the Great Basin Bird Observatory survey, June 2005.

Habitat restoration work for Amargosa Toad in Nye County, Nevada. For The Nature

Conservancy, Designing and implementing breeding pools, trapping invasive species, surveying eggs and larvae for breeding effort population estimates. Wrote reports. 2006-2007, 2009.

Biologist for U. S. Geological Survey Inventorying and Monitoring Program for Death Valley National Park herpetological surveys. Implemented wide range of surveys techniques to sample diversity of species in various habitats from wetlands and desert to montane, including visual encounter surveys, pitfall trapping, patch surveys, night surveys. Database development. Surveyed for Mojave fringe-toed lizards in known and potential habitats in the park. April to October 2002 and 2003.

Biologist for U. S. Biological Survey declining amphibian program in Yosemite National Park, Sequoia National Park, Point Reyes National Seashore, and California Central Valley and foothill habitats. Work under Gary Fellers, PhD, surveying for Red-legged frog, Foothill yellow-legged frog, Mountain yellow-legged frog, Yosemite toad, and rare salamanders. Implemented visual encounter surveys, patch surveys, night surveys, 10-day backpacking expeditions to remote parts of Yosemite and Sequoia National Parks to assess lake and meadow habitats for amphibians and census populations, collect blood samples from tree frogs for measuring pesticide affects on hormones, measure habitat characters, took photographs of amphibians and habitat. Trained U. S. Forest Service personnel in amphibian survey techniques. March to October 1994-1995.

Volunteer on Flat-tailed horned lizard surveys, Imperial County. For El Centro BLM, on East Mesa. Spring, 1996.

Interpretive Ranger for the National Park Service, Death Valley National Park. Seasonal 1993.

Seasonal Biological Aide for California Department of Fish and Game, Bishop, California. Habitat restoration work, surveys, and trapping invasive species competing with Owens pupfish, Owens tui chub, Owens sucker, and Owens speckled dace in variety of locations in Owens Valley. Surveys for Black toad in Deep Springs Valley. Creel surveys for trout in Owens River and Hot Creek. Stream habitat surveys and measurement for trout n Long Valley, and for native Steelhead in southern California streams. Habitat restoration for Lahontam cutthroat trout. Surveys for Paiute cutthroat trout. Participated in Tule elk aerial counts, and Mule deer winter forage measurements. March to October 1992 and June to December 1993.

TRAINING:

Attended the Desert Tortoise Council workshop on environmental compliance monitoring on construction projects in 1999.

The University of Texas at Austin, Conservation biology class with Dr. Dick Richardson in 2000.

Supplemental Testimony of Kevin Emmerich, Exhibit 804

Qualifications

From 1985 to 2002, I have mostly worked for the National Park Service (NPS), but did have two seasons as a Recreation Technician for the Bureau of Land Management in the State of Utah. Most of the jobs I held in the NPS were in the capacity of a Park Ranger. During this period I worked at 7 National Parks and Monuments. The last 11 of these years were spent working full time in Death Valley National Park. The primary duties of these jobs were quite varied and included providing interpretive presentations, helping visitors plan backcountry trips and resource monitoring projects. I have served on Backcounty/Wilderness committees and have provided input on several varied park wilderness and General Management Plans. I have lived in the Mojave Desert for 20 years and have been hiking and exploring the remote backcountry here since I was 13 years old. I value recreation opportunities in public land, including parks, wilderness areas, exploring wild areas off the beaten track and wildlife photography.

I have worked on several Resource Monitoring projects for biological resources for both the National Park Service and independently. These projects include Desert tortoise surveys and telemetry monitoring, Mojave fringe-toed lizard surveys, bighorn sheep remote camera monitoring, flat-tail horned lizard surveys, Panamint alligator lizard surveys, and western toad surveys.

My qualifications are provided on my Resume attached to this Testimony and as discussed below.

Statement

1. The photographs in exhibit 803 are both my own and from Laura Cunningham, taken with a digital Nikon D70 and Canon A590 camera.

2. I visited the Calico SES Solar One proposed site on 16 June 2009, 28 March 2010, 17 April 2010, and 11 July 2010. On these visits I spent from 7 to18 hours on the site and immediate vicinity. One of these visits was at night to view stars and nocturnal animals. I visited the Daggett Ridge southwest of the site on 29 March 2010 to observe the wind energy project proposed for the site to assess cumulative impacts large scale energy development slated for sensitive habitat would have on the region.

3. I feel that the scenery on the Calico Site is more deserving of preservation over development. The sweeping views of undeveloped mountains and desert basins have qualities similar to those landscapes that have been chosen for preservation of National Parks and Wilderness Areas. On each visit, we made unique plant and wildlife sightings.

4. I own 160 acres of land in the east Mojave Desert. If my property were to be surrounded by Sun catcher mirrors, it would be very difficult, if not impossible to live there. Under

such a proposal, my property values would go down. It is my opinion that the Calico Project will impact the view, quality of life and property values of any land-owners that have property in or adjacent to the project.

5. I own a 4x4 vehicle, and enjoy traveling on the dirt roads to access remote desert areas to camp, hike, and photograph natural subjects. I have driven up Hector Road to access the Cady Mountains as well as the power line road east of the project site to access the Cady Mountains. I have explored the Box Canyon route in the Rodman Mountains. I have visited many of the areas, including Pisgah Area of Environmental Concern, that lie within the western proposed boundary of the Mojave Trails National Monument, which the Calico Project would lie adjacent to.

6. I visited the Cady Mountains on 16 June 2009 and 17 April 2010. I hiked to two separate ridges overlooking the proposed Calico Project site. From personal experience in the Cady Mountains, the Calico project would be visible from many locations within the range, including within on the fan approach, in canyons, and along ridgelines. If legislation passes, this would all be within the view of the Mojave Trails National Monument. My visitor experience of the Monument would be negatively impacted by seeing a large industrial development so close, with glare and night lighting, as I plan to visit the Cady Mountains again in the future. Based on my NPS experience, many visitors to the new monument and the nearby Wilderness areas would not appreciate the desert landscape developed to such an extent so close to their boundaries. In my experience, desert recreationists are seeking the wide open vistas, natural landscapes, wildlife viewing, and wild feel of the American Southwest, and a large power plant with flash-glare from SunCatcher mirrors and unsightly new transmission lines could negatively affect their visit. A new National Park Service area would be perceived by visitors with even more conservation perspectives and standards than the existing California Desert Conservation Area. A new NPS area would also develop standards designating buffer zones to protect the view. The impacts to the local scenery could not be mitigated.

7. I have visited the Pisgah Crater Area of Critical Environmental Concern and the Rodman Mountains Wilderness Area on 28 March 2010 and 17 April 2010. The industrial look that development of the Calico project would bring to the area would take away from the wild character of these two areas.

Resume of Kevin Emmerich
PO Box 70
Beatty NV 89003
(775) 553-2806
atomictoadranch@netzero.net

EDUCATION:

Utah State University, Logan, Utah 1981-1982

University of Utah, Salt Lake City, Utah 1983-1985

Major: Physical Geography

WORK EXPERIENCE

Park Ranger, Natural Bridges National Monument.
Duties:

Visitor interpretation and information and emergency response, trail and road patrols, resource monitoring projects-wildlife and plants. Survey and monitoring of archeology sites, park entrance fee collection. 1985, 1987 to 1988.

Park Ranger, Grand Canyon National Park
Duties:

Visitor interpretation and information and emergency response, park entrance fee collection, assistance in backcountry management. 1988, to 1990.

Park Ranger, Bandelier National Monument
Duties:

Visitor interpretation and information, park entrance fee collection.
Backcountry trail patrol. Archeology site surveys. 1989-1990

Park Ranger, Great Basin National Park
Duties:

Visitor interpretation and information, park entrance fee collection. 1990, 1991

Park Ranger, Death Valley National Park
Duties:

Visitor interpretation and information, park entrance fee collection, environmental education

outreach, museum display, emergency response, resources monitoring projects on wildlife including bighorn sheep, desert tortoise, western toads, Panamint alligator lizards and Mojave fringe-toed lizards.

Served on backcountry and wilderness committees, evaluated management plans, and NEPA documents development projects. Visual resources were always a part of the evaluation. 1991 to 2002.

Recreation Technician,
Bureau of Land Management
San Juan Resource Area

Duties:

Checking permits and equipment of people taking raft, kayak and canoe trips down the San Juan River in Southern Utah. River Patrols. Reviewed visual impact analysis. 1986

Recreation Technician,
Bureau of Land Management
Grand Resource Area

Duties:

Checking permits and equipment of people taking raft, kayak and canoe trips down the Colorado River in Westwater Canyon in Southern Utah. River Patrols. Reviewed visual impact analysis. 1987

VOLUNTEER EXPERIENCE

Park Volunteer

Arches National Park
Duties:
Visitor interpretation and information. 1987

Sunset Crater National Monument
Duties:
Visitor interpretation and information. 1985

OTHER:

Field Biologist for Chuckwalla Study in Death Valley National Park and region. Visual encounter surveys for repeat counts to estimate population trends over multi-year period, for the

Timbisha Shoshone Tribe. Concerns about declines noted by the Tribe triggered a long-term study on Chuckwalla feeding behavior, habitat, breeding areas, Traditional Ecological Knowledge, and potential threats. 2007-2009.

Volunteer in Desert tortoise study with Hal Avery, PhD, in southern Ivanaph Valley. Radiotelemetry of tortoises, habitat surveys for tortoise forage and interaction with cattle, rainfall measurement, X-ray of tortoises for egg counts. Spring and Fall 1999 and 2000. 400 hours

Field Biologist Assistant on Surveys for Tortoise on Blythe Dam project. Initial surveys for tortoise and sensitive species in Riverside County, California, for Edward LaRue. April 2000.

Volunteer Biology Survey: Desert Tortoise Natural Area. 50 hours, Spring, 1997

Field Biologist, Mojave fringe-toed lizard survey on OHV recreation areas. Work under David Morafka, PhD, for BLM study on affects of off-road recreation on lizard density, distribution, and population at Dumont Dunes and Rasor Dunes. Area-constrained surveys and habitat characterization. Presence-absence surveys on other habitats in region. 2002. Contributions to Morafka, David J. 2002. 1000 meter transect analyses of frequencies of Mojave fringed- toed lizards at ORV BLM sites at El Mirage Dry Lake, Rasor Road, and Dumont Dunes, San Bernardino County, California, Summary Report for 2002 and recommendations for 2003. Prepared for Anteon Corporation.

Field Biologist, Mojave fringe-toed lizard surveys and genetic sampling. Work under David Morafka, PhD, at El Mirage Dry Lake, Coyote Holes, Silver Lake, Rasor Dunes, Dunomt Dunes, Ibex Dunes. 2001-2002. Contributions to Murphy, Robert W., Tanya L. Trépanier, and David J. Morafka. 2006. Conservation genetics, evolution, biogeography and distinct population segments of the Mojave Fringe- toed Lizard, *U. scoparia*. Journal of Arid Environments 67

Exhibit 800 - Informal survey tracks and photographs at Calico Solar Project site, San Bernardino County, California.

Informal survey routes in Calico Solar Project southern Phase 2. From left to right, Routes 2, 1, and 3.

Mojave fringe-toed lizard habitat quality ratings: 1 - good quality permanent habitat where fringe-toed lizards would breed and are common; 2 - lesser quality habitat where lizards would be uncommon but still permanent residents; 3 - connectivity habitat where lizards would be expected only seasonally or irregularly in dispersal across poorer quality habitat.

Survey Route 1

Photo 1-1. Start. Potential Fringe-toed lizard Habitat type 3. Location: 11S 0551437E 3851079N

Photo 1-2. Creosote flat, Habitat type 3. Location: 11S 0551456E 3851037N

Photo 1-3. Creosote with fine sand at base. Location: 11S 0551513E 3850900N

Photo 1-4. Coarse sand meets desert pavement. Location: 11S 0551544E 3850775N

Photo 1-5. Low hill with sand and interfingering desert pavement, Habitat type 2-3. Location: 11S 0551617E 3850560N

Photo 1-6. Sand with dry biological soil crust. Location: 11S 0551624E 3850541N

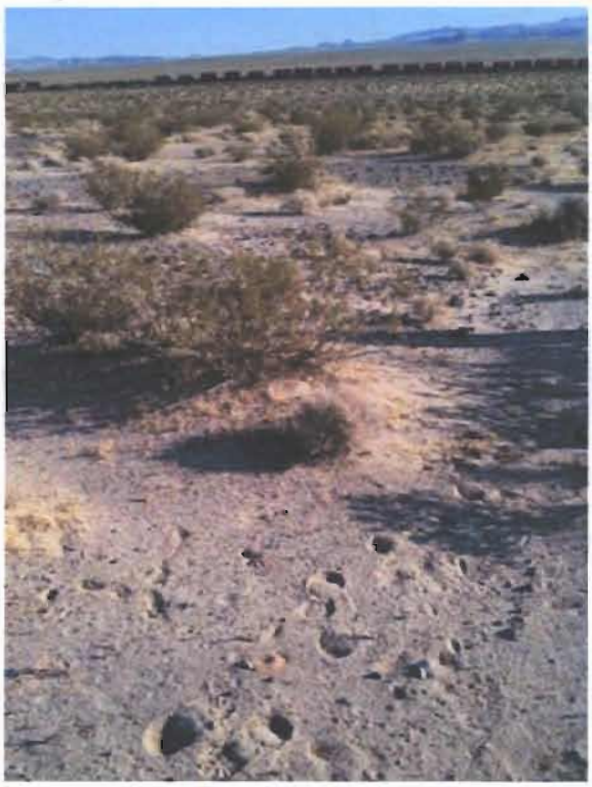


Photo 1-7. Habitat type 2 potential on hill slope north face, a pocket of fine sand. Location: 11S 0551738E 3850489N

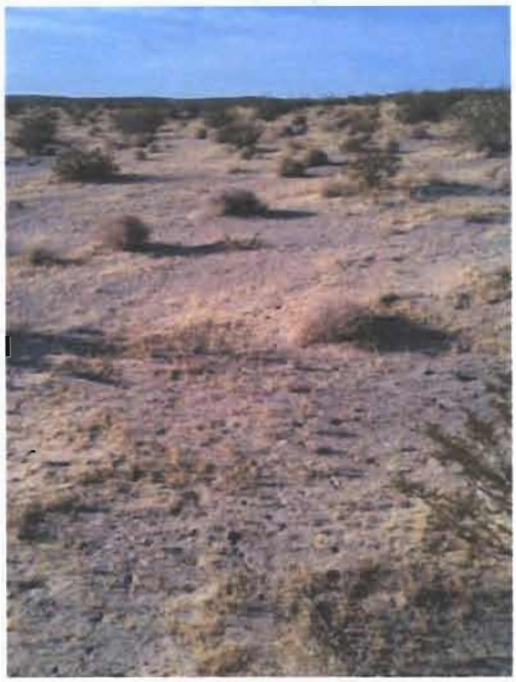


Photo 1-8. Habitat type 2 on low ridge with sand. Location: 11S 0551745E 3850511N

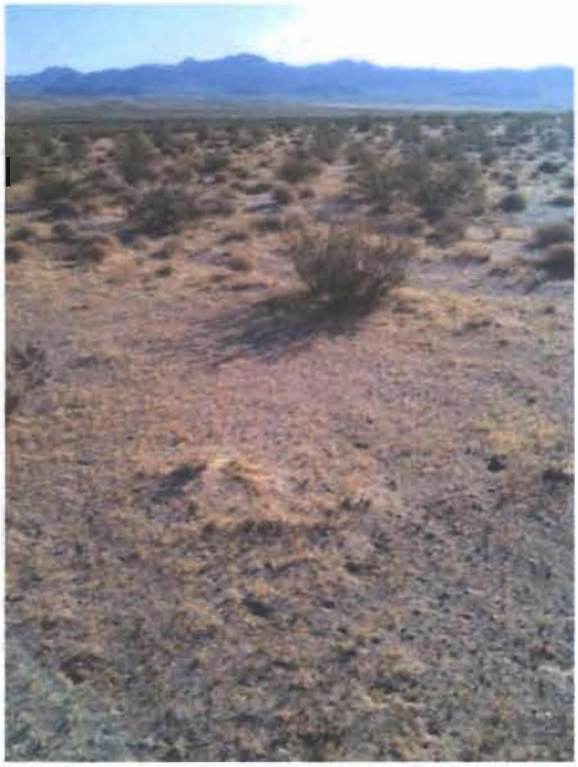


Photo 1-9. Habitat type 2. Location: 11S 0551746E 3850514N

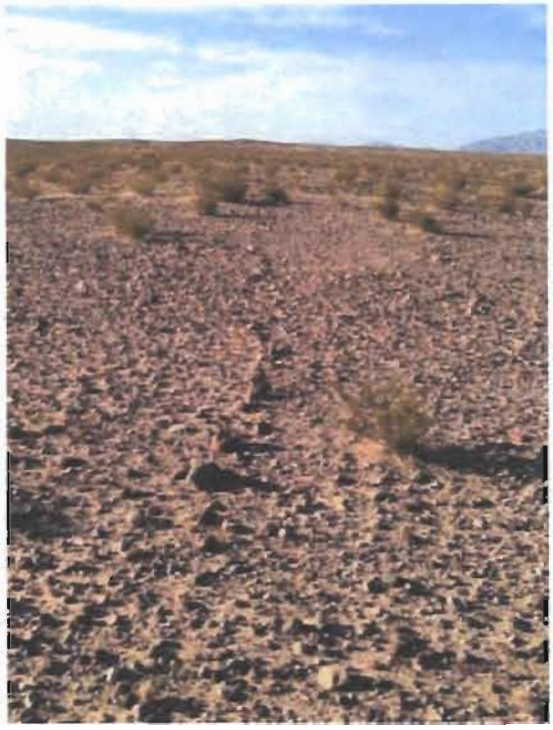


Photo 1-10. Geoglyph? Not Fringe-toed lizard habitat, desert pavement on low ridge.

Photo 1-11. Geoglyph?

Photo 1-12. Geoglyph?

Photo 1-13. Geoglyph?

Photo 1-14. Geoglyph? Embedded rock cluster at end of linear feature.

Photo 1-15. Habitat type 3 wash between hills with coarse sand gravel. Location: 11S 0551734E 3850310N

Photo 1-16. Habitat type 2-3 area of hard-packed sand and gravel between low ridges. Location: 11S 0551693E 3850154N

Photo 1-17. Habitat type 3 between low ridges. Hard-packed sand-gravel. Location: 11S 0551642E 3850076N

Photo 1-18. Small sand blow-up. Loose fine sand. Location: 11S 0551715E 3849879N

Photo 1-19. Habitat type 3 in low area. Location: 11S 0551717E 3849864N

Photo 1-20. Small sand blow-up on low ridge. Location: 11S 0551749E 3849800N

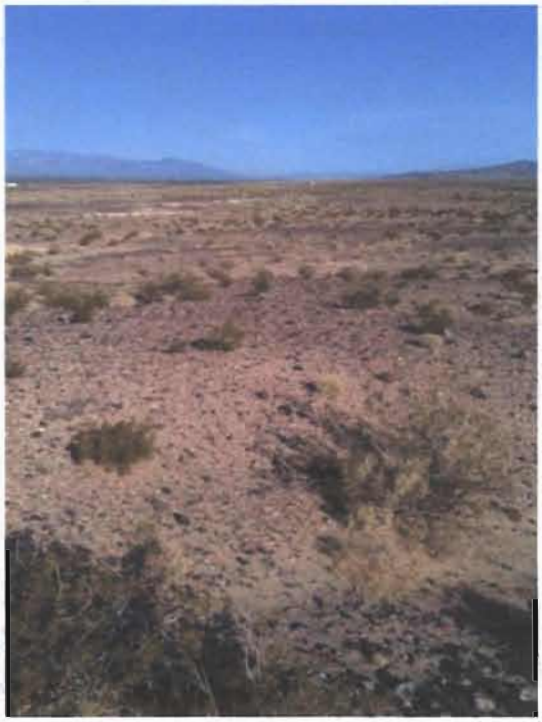


Photo 1-21. Low ridge of desert pavement, not habitat for fringe-toed lizards. Location: 11S 0551750E 3849802N

Photo 1-22. Fine sand by saltbush (*Atriplex polycarpa*). Location: 11S 0551704E 3849783N

Photo 1-23. Finer sand in low area. Habitat type 2. Location: 11S 0551698E 3849785N

Photo 1-24. Coarser sand gravel flat could be Habitat type 3. Zebra-tailed lizard (*Callisaurus draconoides*) present. Location: 11S 0551515E 3849815N

Photo 1-25. Coarser sand gravel flat could be Habitat type 3. Location: 11S 0551519E 3849815N

Photo 1-26. Small area fine loose sand next to flat. Habitat type 1-2. Location: 11S 0551293E 3849902N

Photo 1-27. Fine sand on bluff edge. Location: 11S 0551271E 3849929N

Photo 1-28. Wash. Habitat type 2-3. Location: 11S 0551162E 3849918N

Photo 1-29. Wash. Location: 11S 0551152E 3849920N

Photo 1-30. Wash. Location: 11S 0550965E 3849932N

Photo 1-31. Wash. Location: 11S 0550869E 3849939N

Photo 1-32. Wide braided wash flat, Habitat type 3. Location: 11S 0550480E 3850210N

Photo 1-33. Desert pavement, not fringe-toed lizard habitat. Location: 11S 0550481E 3850215N

Photo 1-34. Hard-packed sand and gravel, Habitat type 3. Location: 11S 0550482E 3850217N

Photo 1-35. Desert pavement and sand interfingering. Location: 11S 0550704E 3850478N

Photo 1-36. Desert pavement, not habitat. Location: 11S 0550702E 3850478N

Photo 1-37. Habitat type 3. Location: 11S 0550798E 3850547N

Photo 1-38. Fine sand between Desert pavement. Habitat type 1-2. Location: 11S 0550872E 3850619N

Photo 1-39. Fine sand between Desert pavement. Habitat type 1-2. Location: 11S 0550883E 3850624N

Photo 1-40. Sand with fine gravel, Habitat type 3. Location: 11S 0551063E 3850755N

Photo 1-41. Sand with fine gravel, Habitat type 3. Location: 11S 0551066E 3850758N

Photo 1-42. Sand with fine gravel, Habitat type 3. Location: 11S 0551065E 3850758N

Photo 1-43. Splitgrass (*Schismus* sp.) flat with hard-packed sand and gravel, Habitat type 3. Location: 11S 0551288E 3850969N

Photo 1-44. Splitgrass (*Schismus* sp.) flat with hard-packed sand and gravel, Habitat type 3.
Location: 11S 0551414E 3851060N

Survey Route 2

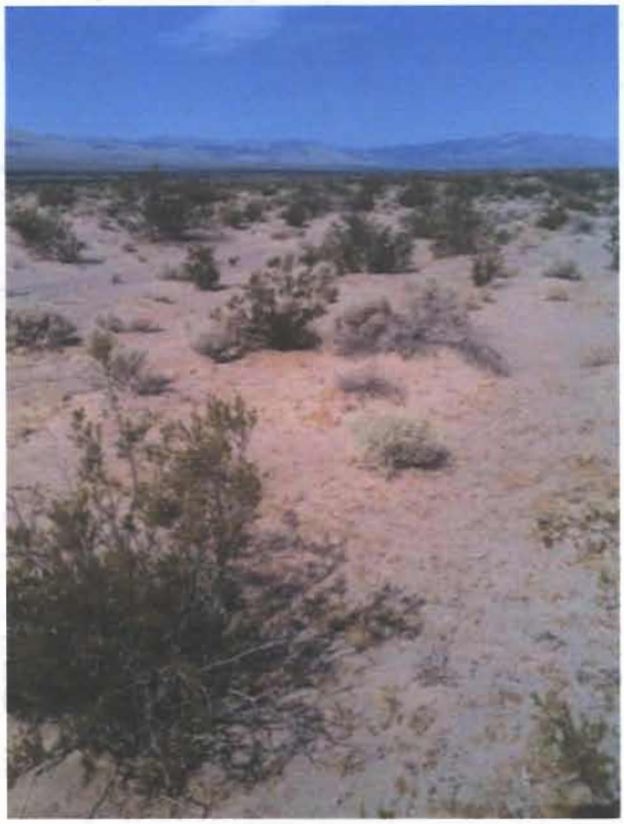


Photo 2-1. Coarse sand, Habitat type 3. Location: 11S 0547630E 3851401N

Photo 2-2. Coarse sand, Habitat type 3. Location: 11S 0547630E 3851401N

Photo 2-3. Coarse sand, Habitat type 3. Location: 11S 0547633E 3851404N

Photo 2-4. Coarse sand, Habitat type 3. Location: 11S 0547605E 3851280N

Photo 2-5. Hard-packed silt gravel, not fringe-toed lizard habitat. Location: 11S 0547572E 3851186N

Photo 2-6. Hard-packed silt gravel. Location: 11S 0547537E 3851073N

Photo 2-7. Gully wash with sand and Big galleta grass (*Hilaria rigida*), Habitat type 2-3. Location: 11S 0547462E 3850929N

Photo 2-8. Saltbush (*Atriplex polycarpa*) wash, Habitat type 3 potential. Location: 11S 0547412E 3850800N

Photo 2-9. Catclaw acacia (*Acacia greggii*). Location: 11S 0547336E 3850625N

Photo 2-10. Edge of lava with sand, Habitat type 1-2. Location: 11S 0547246E 3850494N

Photo 2-11. Fine sand in lava field, Habitat type 1-2. Location: 11S 0547237E 3850485N

Photo 2-12. Possible Tortoise burrow in sand. Location: 11S 0547227E 3850477N

Photo 2-13. Fine sand in lava, Habitat type 1-2. Location: 11S 0547234E 3850426N

Photo 2-14. Fine sand in lava, Habitat type 1-2. Location: 11S 0547216E 3850374N

Photo 2-15. Fine sand in lava, Habitat type 1-2. Location: 11S 0547215E 3850376N

Photo 2-16. Fine sand in lava, Habitat type 1-2. Location: 11S 0547214E 3850375N

Photo 2-17. Biological crust in sand. Location: 11S 0547182E 3850472N

Photo 2-18. Mourning dove nest on lava. Location: 11S 0547187E 3850485N

Photo 2-19. Honey mesquite (*Prosopis glandulosa*). Location: 11S 0547197E 3850515N

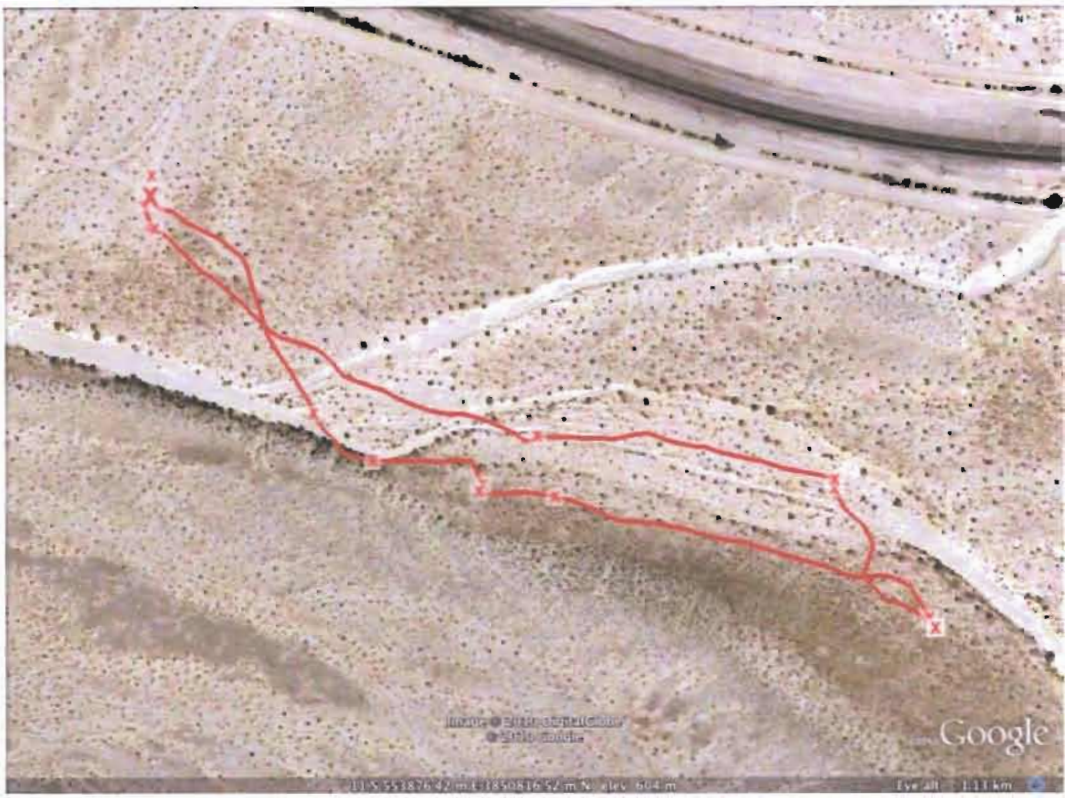
Photo 2-20. Galleta grass-saltbush wash, Habitat type 3. Location: 11S 0547214E 3850622N

Photo 2-21. Hard-packed silt-gravel, not good fringe-toed lizard habitat. Location: 11S 0547385E 3851048N

Photo 2-22. Hard-packed silt-gravel, not good fringe-toed lizard habitat. Location: 11S 0547388E 3851058N

Photo 2-23. Possible old tortoise burrow. Location: 11S 0547405E 3851153N

Photo 2-24. Possible Habitat type 3 with hard-packed sand. Location: 11S 0547472E 3851301N



Survey Route 3 in known Mojave fringe-toed lizard habitat patch.

Photo 3-1. Flat with fine sand and gravel, Habitat type 1-2. Location: 11S 0553737E 3850746N

Photo 3-2. Loose fine sand with some gravel, Habitat type 1. Desert iguana (*Dipsosaurus dorsalis*) present. Location: 11S 0553830E 3850611N

Photo 3-3. Sand, Habitat type 1. Location: 11S 0553864E 3850584N

Photo 3-4. Dicoria (*Dicoria canescens*) in fine sand, Habitat type 1. Location: 11S 0553927E 3850571N

Photo 3-5. Fine sand, habitat type 1. Location: 11S 0553924E 3850567N

Photo 3-6. California croton (*Croton californicus*) in sand, Habitat type 1. Location: 11S 0553968E 3850564N

Photo 3-7. Habitat type 1, sand along wash. Location: 11S 0554179E 3850497N

Photo 3-8. Habitat type 1, sand next to hillslope. Location: 11S 0554182E 3850491N

Photo 3-9. Habitat type 1, sand next to hillslope. Location: 11S 0554182E 3850491N

Photo 3-10. Habitat type 1, sand flat. Location: 11S 0554182E 3850491N

Photo 3-11. Habitat type 1. Location: 11S 0554182E 3850491N

Photo 3-12. Smoke trees in sandy wash, habitat type 1. Location: 11S 0554126E 3850569N

Photo 3-13. Smoke tree. Location: 11S 0554127E 3850575N

Photo 3-14. Habitat type 1, fine loose sand. Location: 11S 0553958E 3850599N

Photo 3-15. Habitat type 1, fine sand-gravel flat with sandy hill in distance. Location: 11S 0553738E 3850716N

Exhibit 801 - Mojave fringe-toed lizard habitat at Ford Dry Lake area, Riverside County, California.

Mojave fringe-toed lizard (*Uma scoparia*) at Palen Dunes/Ford Dry Lake.

Typical sand dune habitat at Ford Dry Lake area. Mojave fringe-toed lizards seen here.

Atypical Mojave fringe-toed lizard habitat on hard-packed gravel-sand-silt flats half a mile from sand dunes. Lizards present.

Atypical habitat on hard-packed gravel-sand-silt.

Pocket of loose sand around creosote bushes in hard-packed flat. This entire area was Mojave fringe-toed lizard habitat.

Exhibit 802 - Satellite imagery of sand in the Calico Project Site area. Light-colored areas were ground-checked and found to be mostly sand. Prevailing westerly winds blow areas of sand from sources in the Mojave River drainage and Troy Dry Lake eastward.

m

Detail of photograph showing sand blowing around a small hill in Pisgah ACEC.